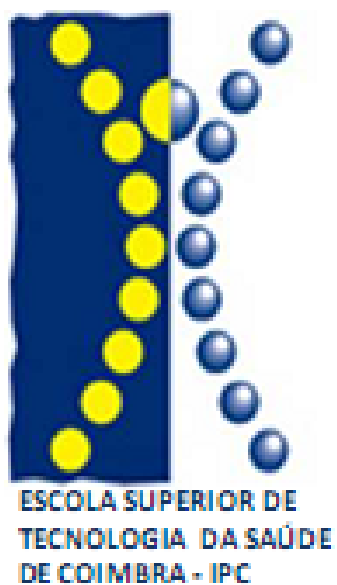


**ESTeSC – Coimbra Health School**

**Abstract Book**

**Poster Week 09/18**

**May 14<sup>th</sup> – 18<sup>th</sup>, 2018**



## **SCIENTIFIC COMITEE**

Ana Catarina Almeida Pestana Lança  
Ana Filipa Gonçalves Carvalho  
Ana Lúcia Baltazar Santos  
Ana Maria Conceição Ferreira  
António Jorge Dias Balteiro  
Carla Sofia Duarte de Matos Silva  
Célia Margarida Alcobia Gomes  
Cláudia Isabel Trindade dos Reis  
Cristina Jordão Nazaré  
Cristina Sofia dos Reis Santos  
Cristiano Filipe Romão Matos  
Fernando José Figueiredo Agostinho d' Abreu Mendes  
Gonçalo Teixeira Coelho Silva Moreira  
João Pedro Marques Lima  
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Maria Helena Vieira Soares Loureiro  
Maria Inês Cardoso Araújo  
Paulo Nuno Centeio Matafome  
Rui Santos Cruz  
Sónia Alexandra da Silva Pimentão Fialho

## **EMAIL**

[posterweek@estescoimbra.pt](mailto:posterweek@estescoimbra.pt)

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PROGRAM

Calendarização Poster Week 09/2018

	2ªf 14/mai	3ªf 15/mai	4ªf 16/mai	5ªf 17/mai	6ªf 18/mai
8-9h					
9-10h	Cristiano Matos: 4P Curso: <b>Farmácia</b> UC: Bioempreendedorismo	Luisa Macieira: 4P Curso: <b>Dietética e Nutrição</b> UC: Patologia Aplicada Dietética Clínica II	Paulo Matalafome: 8+2P Curso: <b>Farmácia + Dietética e Nutrição</b> UC: Anatomofisiologia II		Joaquim Pereira: 7P Curso: <b>Fisiologia Clínica</b> UC: Electrocardiologia 2
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14-15h	Gonçalo Moreira: 9P Curso: <b>Dietética e Nutrição</b> UC: Nutrição e Saúde Pública	Célia A. Gomes: 8P Curso: <b>Dietética e Nutrição</b> UC: Microbiologia Alimentar	Ana Baltazar: 12P Curso: <b>Dietética e Nutrição</b> UC: Tecnologia Alimentar	Cristina Santos: 7P Curso: <b>Saúde Ambiental</b> UC: Gestão Qualidade da Água II	
15-16h			Fernando Mendes: 6P Curso: <b>Ciências Biomédicas Laboratoriais</b> UC: Imuno-hemoterapia Clínico-Laboratorial I		
16-17h			Rui Cruz: 4P Curso: <b>Farmácia</b> UC: Deontologia e Regulamentação em Farmácia		
17-18h					
18-19h				Ana Lança: 5P Curso: <b>Saúde Ambiental</b> UC: Administração da Saúde	
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20-21h					

## **INHALED INSULIN DEVICE: AFFREZA®**

***Catarina Lourenço, Karina Garcia, Marlene Silva, Telma Faria***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Diabetes Mellitus is a metabolic disease characterized by chronic hyperglycemia resulting in the alteration of insulin secretion that continues to present a high incidence rate worldwide.

Patients with diabetes require insulin therapy to control this disorder . Despite this, most patients are reluctant to start insulin treatment due to fear of injections and risk of hypoglycemia.

The objective is to present one of the latest innovations in pharmacy, the inhaled insulin pump Affreza®.

Until 2014, insulin preparations were only available as injectable formulations, however pumps with a new inhaled insulin - Technosphere insulin- the only insulin product with rapid action that is currently available and approved by Food and Drug Administration for inhalation.

This device contains an insulin powder that dissolves immediately on inhalation causing the peak of maximum concentration to occur 12-15 minutes compared with approximately 40 minutes that subcutaneous insulin administration takes. The fact that the particles have a small size facilitates the distribution and absorption of the drug.

Another advantage of this pump is the occurrence of fewer cases of hypoglycemia compared to insulin injectable administrations. The disadvantages are the fact that it can not be used by asthmatics and patients with Chronic Obstructive Pulmonary Disease considering that Afrezza® may cause a decline in lung function over time – and patients under 18 years old a consequence of the lack of studies.

In conclusion, this device represents an advantage and a new option for patients with diabetes that may help to improve their quality of life.

**Keywords:** Device; Inhaled Insulin; Diabetes; Affreza®

## **FEMALE VIAGRA**

***Ana Rodrigues, Ana Silva, Maria Lebre, Sofia Morais***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Background: Menopausal women have a gradual decrease in the production of estrogens, progesterone and androgens which can lead to hypoactive sexual desire disorder (HSDD) characterized by reduced sexual fantasies and sexual desire. The objective of this review is to describe the characteristics of a female sexual stimulant.

Methods: This project was based on six articles present in the Pubmed and Google Scholar databases, searched in March 2018.

Results: The "female viagra", Addyi, has the active ingredient flibanserin, used to treat HSDD in premenopausal women. Increases the release of dopamine and norepinephrine and reduces the release of serotonin. It has 0.75 hours as peak plasma time, the dosage is 1 tablet (100 mg) at bedtime, being discontinued after 8 weeks without improvement.

Discussion: The "female viagra" is different from the male at the level of mechanism of action, active principle and posology. Addyi was approved by the FDA on 18 August 2015 being previously canceled because its effectiveness isn't sufficient to justify the risks. As a result of that 3 clinical trials were requested to enlight the interaction of the drug with alcohol, in addition to improved pharmacovigilance.

Conclusion: This has already been approved in the United States but it is necessary for its approval by the authority of the European drug for flibanserin to arrive in Portugal. After marketing, a study on the efficacy and safety of flibanserin indicated that the clinical benefits of flibanserin are marginal, with adverse effects described: risk of dizziness, sleepiness, nausea and fatigue.

**Keywords:** Female Viagra, Flibanserin, HSDD

## MONITORING GLUCOSE LEVELS THROUGH CONTACT LENS

***Andreia Acúrcio, Jéssica Gouveia, Mariana Ramos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

In the 21st century, diabetes is one of the most prevalent chronic pathologies. Thus, there is an increasing need to monitor it, allowing the control of glycemic levels. This control can be performed through blood or urine tests, that presenting disadvantages since these fluids need to be collected before analysis, not allowing a continuous control of the glucose levels. Due to this gap, several studies have shown different and new solutions to overcome this, as flash monitoring wireless systems or contact lens.

Our study was based on scientific review of articles since 2015.

A contact lens was created, which has the ability to measure glucose levels through tears. Taking into account the studies carried out so far, there is no agreement of the accuracy of the values obtained through this method. This measurement occurs naturally, through normal secretion or blink of an eye, no longer requiring collection of fluids for analysis, which is an advantage. However, this lens must have appropriated characteristics to this situation, such as the possibility of performing a correct measurement and their constitution must be right for the ocular area of the patients. Therefore, their development goes through many requirements and it is something that needs to be studied.

Otherwise there are there are some disadvantages that may compromise the use of this method, namely the difficulty of adapting it by the older population. There are no studies showing if persons with altered vision and eye problems can use this, as well as the possibility of the lens containing graduation.

Contact lenses for the measurement of diabetes are a valid alternative for the real-time monitoring of the user's blood glucose values.

**Keywords:** Contact Lens, Glycemic Levels, Diabetes, Innovation

## REFILLRX

***Damiana Chumbinho, João Santos, Mariana Couras, Pedro Vieira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

**BACKGROUND:** In the 21st century, technological diversity can be used to optimize health practices. Regarding pharmacy practice, technological advances allow to establish tools to have quick, easier and intuitive access to medication. Nowadays, about 67% of the world population has access to a smartphone, and for this reason there are several smartphone apps that allow real time access to each patient's health data.

**METHODS:** A research was made through several search engines using the following keywords: "Innovation", "Pharmacy", and "Medication". Thereafter, it was checked if the innovations found already existed in Portugal.

**DISCUSSION:** RefillRx® is an application that can be used in countries where a bulk distribution system is used, available free of charges for Apple® and Android® devices, which allows patients to prepare the refill of a prescription even before it reaches to pharmacy.

The operation is processed through a personal registration in the application, without online storage of the information entered except when activating the session through simple login, the user reads the bar code of the prescription and the application sends a request to a local pharmacy as long as it has the Rx30® software.

**CONCLUSION:** In this context, RefillRx®, despite being an application that can hardly be applied by the elderly, is a tool that has several advantages such allowing the user in a didactic, practical and intuitive way to have access to his medication reducing the processes of unnecessary movement and facilitates the management of stocks by the participating Pharmacies.

**Keywords:** "Innovation", "Pharmacy" and "Medication"



## **OBESITY – CAUSES AND CONSEQUENCES**

***Joanna Nunes, João Cardoso, Maria Teixeira, Sara Resende, Tiago Freitas***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Obesity is a Chronic Non-communicable Disease (NCD) with a high prevalence in XXI century. According to the World Health Organization (WHO), obesity is an abnormal or excessive accumulation of body fat capable of affecting individual's health.

The most relevant causes are the social ones, resulting from an environment that promotes sedentary lifestyles and the consumption of densely energetic foods with a high content of fats, salt and sugars. Pre-obesity and obesity are directly related to a positive energy balance, resulting from a higher ingestion than the energy outlay.

Obesity contributes to the development and worsening of various diseases, such as hypertension, cancers, biliary disorders, reduction of oral glucose tolerance, cardiovascular diseases and diabetes.

Obese individuals are often discriminated by society and employers, which can lead to psychological problems, such as depression, anxiety, low self-esteem and social isolation, which affect their quality of life.

Currently, obesity has been considered the most important nutritional disorder in developed and developing countries, due to the increase in its incidence.

It is necessary to create public policies with multidisciplinary actions for the prevention of obesity, with the collaboration of civil society, through accountability and self-care.

**Keywords:** Causes, Consequences, Obesity

## TREATMENT OF OBESITY IN ADOLESCENTS

**Alexandra Costa, Beatriz Lúcio, Eduarda Carvalho, Joana Mesquita, Rafaela Melo**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Adolescence is one of the most challenging periods of human life cycle. The choice of recurrent lifestyles of poor eating habits, meal omission and sedentary lifestyle can lead to obesity.

This pathology contributes to the early onset of various chronic diseases, affects sexual maturation and facilitates the emergence of social maladjustment, depression, anxiety, stress, disturbances in body image perception and eating disorders. In this way, it is important to define an effective treatment, which should focus on the establishment of individualized treatment objectives and interventions based on the child's age and degree of obesity. Due to its complexity, involves a multidisciplinary team that includes the following areas: cognitive-behavioral therapy (CBT) – a semi-structured, objective and goal-oriented intervention that addresses cognitive, emotional and behavioral factors in the treatment of psychiatric disorders, endocrinology for the exclusion of diseases from its forum, dietary education consisting of food education that favors weight control, physical activity and, in the last case, pharmacological therapy and bariatric surgery.

Treatment, when centered on the patient and not just on the information, results in a change in behaviors that can be maintained throughout life. The studies have demonstrated the importance of interdisciplinary care in the treatment of obesity, as a way of approaching the biological, psychological, behavioral and environmental aspects involved in the process. It is important to understand the subjectivity in the practice of health care, in order to improve the results of treatment of overweight adolescents.

**Keywords:** Treatment, multidisciplinary team, obesity

## PREVENTION OF OBESITY IN ADOLESCENCE

**Ana Pequito, Carolina Gomes, Cátia Bispo, Joana Abreu, Mariana Cordeiro**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Obesity is considered a chronic and multifactorial disease. Lifestyle, such as unbalanced diet and physical inactivity, are factors that can influence the prevalence of this disease, both in Portugal and in the rest of the world. According to the World Health Organization (WHO), obesity is defined as an abnormal or excessive accumulation of body fat that can reach degrees capable of affecting health.

The effectiveness of prevention of overweight and obesity in adolescence depends on the family environment, socioeconomic level, community, school and all professionals working with adolescents and their families.

It is important that the prevention begins in the childhood period. So, the primary prevention consists of: supporting and encouraging government measures aimed at improving the nutritional status and health of the population; commitments to the food industry, marketing and advertising companies with the aim of reaching the largest number of people, school health teams that develop health education programs, provide nutritionists who appeal to a Mediterranean diet and provide alternative strategies, and finally, improve the qualification and the way of acting of the different professionals that by their activity can influence behaviors in the alimentary area. Lastly, there are numerous ways to adopt a healthy diet and lifestyle little by little with the help of small tips and advices.

In conclusion the consequences to the body of an individual who becomes obese at an early age is much more harmful than an individual who becomes obese in adolescence, so prevention is very important to maximize our health.

**Keywords:** Obesity, Prevention, Adolescence

## **OBESITY IN ADOLESCENCE**

***Alexandra Coelho, Ana Ferreira, Carolina Silva, Margarida Tomé***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Obesity has received a very special attention from the general population. Its incidence and prevalence have been increasing, particularly in teens, requiring intervention from several entities, in which stand out the Ministry of Health and education. In the long term, obesity in adolescence shows a higher prevalence in male adolescents, accompanied by an increased risk of comorbidity and mortality. Portugal is highlighted in the list of European countries with the highest number of adolescents with this pathology, mainly due to the sedentary lifestyle adopted by the majority of adolescents, to the omission of meals and to the social "fast food". This whole scenario leads to harmful consequences in the adolescent's such as high blood pressure, carcinoma of the colon, infertility, insufficient respiratory diseases, type II diabetes mellitus, among others, as such, it is imperative to carry out plans for treating the disease that is considered the epidemic of the 21st century.

**Keywords:** obesity, teenagers

## TREATMENT OF OBESITY IN ADOLESCENTS

***Catarina Grumete, Filipa Santos, Joana Fernandes, Pamela Fonte***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Obesity is one of the most common health issues, being a chronic disease and a risk factor for the development of other diseases, such as diabetes type II and cardiovascular problems.

World Health Organization stated that obesity results from an excessive accumulation of fat on the organism, compromising the quality of life.

Adolescence is one of the most affected age range by this pathology, therefore it is essential to establish effective guidelines to combat obesity. There is a need to sensitize people from a very young age as well as their families. Considering that it is an age group very influenceable by society, it may cause a negative psychological impact resulting on solitude and low self-esteem. Consequently, it is crucial a supportive family environment in order to facilitate the shift from harmful life patterns towards a healthy lifestyle. If necessary parents should adopt healthful habits in furtherance of decreasing the offer of poor nutritional foods and subsequently the consumption of these aliments, by the teenager.

Lastly it is important the role of the nutritionist in this process. This health professional is responsible for planning adequate meals and ensuring the continuous motivation of the patient.

Commonly the treatment of this illness resorts to a dietetic and psychosocial protocol, however in extreme cases bariatric surgery comes up as an option.

In conclusion obesity is the main health problem nowadays with a challenging treatment, requiring an interdisciplinary approach, being even more imperative this type of treatment in young ages.

**Keywords:** Treatment, obesity, adolescents, nutrition

## **TSDT CAREER DEVELOPMENT**

***Cátia Silva, Damiana Chumbinho, Mariana Couras, Marta Pedro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

The diagnostic and therapeutic technicians (TSDT) constitute an essential health group in Portugal. Their career is regulated for workers with legal relationship of public employment and for workers under a contract of employment.

TSDT's career include workers whose functions correspond to health professions involving the exercise of diagnostic and therapeutic techniques. It includes 18 fields: clinical analysis and public health, pathological, cytological and thatological anatomy, audiology, cardiopneumology, dietetic, pharmacy, physiotherapy, oral hygiene, nuclear medicine, neurophysiology, orthoprotesia, orthoptics, radiology, radiotherapy, ambiental health, speech therapy and occupational therapy. At the level of education, the colleges in which TSDT qualify and acquire qualification for the exercise are, since 1993, integrated Polytechnic higher education and teach graduated courses, with four years of duration, by the latest Bologna model. Created in 1982 but in operation since January 1980, the Technical Schools of the Health Services of Lisbon, Porto and Coimbra gave rise to the present Higher Schools that were created to respond to the need of education in these areas and by the growth sense of health improvement in Portugal.

Currently, in order to update and improve working conditions, TSDTs have been trying to implement new legislation in order to make their rights fairer compared to other careers that have been updated recently.

**Keywords:** TSDT, Teaching, Profession, Career, Health

## EUTANÁSIA

***Ana Rodrigues, Ana Silva, Maria Lebre, Sofia Morais***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Euthanasia means good, gentle and easy death, designated by the medical action or omission applied at the request of the patient with his consent or previous legal regulation, out of pity and humanitarian compassion, to suppress or abbreviate long, painful and unavoidable agony to those who suffer of incurable disease and is waiting for death. Death is the definitive cessation of life in the body and the right to die is used in the euthanasia debate to propose the right to have death inflicted. The patient must be able to understand explanations, deliberate about their choices and know how to express them. This autonomy is implemented in practice and in the law through informed consent. Thus, there is the vital testament where the anticipated wills are registered to the future manifestation. There are alternatives to euthanasia such as dysthanasia, orthanasia, and assisted suicide. Euthanasia is also related to the palliative care that exists as an interdisciplinary set aimed at the continued follow-up of the terminally ill patient. As it is a subject that brings a great deal of ambiguity and controversy, there are many arguments against and in favor of euthanasia, from religious, ethical to political and social. In Portugal, euthanasia is considered crime, privileged homicide or homicide at the request of the victim.

**Keywords:** Euthanasia, palliative care, death

## ETHICAL DIMENSION IN THE USE OF STEM CELLS

***Anabela Lopes; Paula Silva; Rita Peixoto***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Stem cells are undifferentiated cells which origin other specialized cells with diverse functions according to the tissue or organ they represent, allowing the reparation of damaged tissues and the replacement of dying cells.

They possess three principal characteristics: multifunctional, big capacity of proliferation and multiplication and also big capacity of self-renovation. These cells may have different origins: embryonic or adult origin, and they acquire different levels of potentiality.

These cells are widely used in the clinic, however studies and rehearsals are still needed to turn valid some of the clinical practice results. The first clinical applications with stem cells were the treatment of haematological and oncological diseases such as leukaemia and lymphomas, which result from a non-controlled proliferation of the leukocytes. Nevertheless, stem cells can currently be applied to diverse clinical situations.

Law 12/2009 of 26th march establishes the juridical regimen of quality and safety relative to the offer, harvest, analysis, processing, preservation, storage, distribution and application of tissues and cells from human origin. However, on this day, there is still no concrete definition established about the embryo statute, fact that causes some controversy around its use to obtain embryonic stem cells.

Thus, there are some quite divergent opinions about the use of cells from this nature, regardless the purpose.

**Keywords:** stem cells, embryo, law



## **ETHICS IN THE PRACTICE OF COMMUNITY PHARMACY**

***Ana Portásio, Bárbara Cruz, Bianca Pessoa, Inês Silva***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Health professions are regulated by an Ethical Code, which is a set of values and ethical and deontological principles that guide the conduct of professionals in society, support their decisions for a certain situation, and also justify those decisions. Thus, ethics isn't limited to theoretical knowledge, but, mainly, it's a practical knowledge that is acquired through experience and applied to face problems and watch over human beings and the human being himself. Therefore, the ethical training of health professionals has as its purpose the construction of a critical ethical character, whose fundamental principles are: justice, kindness, respect, autonomy, beneficence/nonmaleficence, solidarity, stealth, preservation of life (human / environmental) and the relief of suffering.

Therefore, our objective is characterize the ethical problems that health professionals, particularly Pharmacy Technicians, face in the course of their practice.

Throughout professional practice, Pharmacy Technicians are often confronted with ethical problems related to the client or the family, with the team or other professionals and in relation to the organization and the health system. Some of these situations force the Pharmacy Technicians to reflect and always act according to their individual formation of ethical and moral values.

In conclusion, ethics and deontology offer the health professional a healthy and useful posture in relation to the patient and other professionals. The public-private aspect of the community pharmacy leads to a greater reflection of this theme in order to avoid that economic criteria, or otherwise, replace the commitment of professional responsibility with the profession itself and with society.

**Keywords:** Ehtic, Pharmacy Community, Pharmacy Technicians

## MEDICALLY ASSISTED FERTILIZATION: SURPLUS EMBRYOS

***André Marote; Pedro Vieira; Rúben Santos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

July 25, 1978 marks a major step in medicine when Louise Brown was born, the world's first baby-tube in the United Kingdom.

Through medically assisted reproductive techniques, it is possible to produce several human embryos, which are considered organisms between the second and eighth week after fertilization. These embryos are cryopreserved for future attempts at implantation and become extemporaneous when couples do not intend to have more children. These embryos may be donated to third parties, donated for use in scientific research, cryopreserved for an indefinite period, or destroyed.

This is the ethical reflection that must be carried out and it will be based on this definition, from when the life of the individual begins, that the institutional policies of whether or not to allow cryopreservation of embryos, and to decide their destiny, should be established. Therefore, this work consists of exposing in a simplified way the different ethical and scientific perspectives of the destiny of surplus embryos.

The moral status of the human embryo has been the subject of wide-ranging theoretical debates of great controversy. A part of the scientific community on the one hand are certain theological perspectives and on the other constitute extremist ideas. At one extreme lies the argument that the human embryo is morally equivalent to an adult human being. At the other extreme is the position that the human embryo is little more than a commodity, susceptible to any scientific experiment.

In short, this issue will always provoke discussion, leading to changes in legislation.

**Keywords:** Surplus embryos; baby-tube; medically assisted reproductive

## USE OF PLACEBO

***Catarina Lourenço, Karina Garcia, Marlene Silva***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

The placebo is currently considered an inert substance, however this use may trigger some adverse effects. His advantages are associated with neurobiological mechanisms involving neurotransmitters, as well as the activation of specific areas of the brain. In this sense, placebo can relieve symptoms but not altering the pathophysiology of the disease.

The objective is to approach the problems associated with placebo and the existence of this tenuous line between its prescription and professional ethics.

Nowadays, the use of placebo is associated with ethic questions. If on the one hand it can limit the patient's right to choose, avoiding him to receive an effective treatment, on the other hand, his administration seems to bring benefits, reinforcing the belief of the patient that when taking the medicine will have clinical improvements. It is also believed that genetic individuality might be a determining factor in the response to placebo.

Therefore, in clinical practice the patient assumes, most of the times, that he is taking effective medication when, in reality, it can be a pill only composed with sugar. In the clinical trials, there is also the use of placebo which, although administered in different contexts, presupposes ethical issues in both cases.

In conclusion, the use of placebo is a controverse theme that continues to rise ethical issues in our society.

**Keywords:** Ethic; Placebo; Prescription; administration

## CLINICAL TRIALS IN PEDIATRICS

***Andreia Acúrcio, Isa Penas, Jéssica Gouveia, Mariana Ramos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Introduction: Clinical trials in pediatrics are the subject of constant discussion, taking into account their impact on health. Currently, the prescription of most medications in children is extrapolated from the results of clinical trials in adults. However, it is risky, since children are not "mini-adults", being a heterogeneous group (ranging from neonatal to adolescence).

Objective: To analyze and describe the evolution in this type of clinical trials.

Materials and Methods: Our study was based on scientific review articles dating from 2012, searching by "clinical trials in pediatrics".

Results: The manifestations of diseases as well as the metabolism of certain substances occur differently between adults and children. When treated equally, children are more susceptible, leading to the occurrence of therapy with a low efficacy, unexpected responses, adverse reactions to the substances and toxicity, which can cause significant damage. Thus, in view of this situation and because some disease only has an incidence in this age group, studies show that, over time and with advances in health in general, the number of clinical trials in pediatrics did not increase. Most pediatric clinical trials, in areas such as oncology, endocrinology, infectious and cardiovascular diseases, come from non-profit associations, with a limited background. This is because there is more financial return from the pharmaceutical industry, and governments are funding more adult clinical trials because of political and economic pressures.

Conclusion: Although there is a need to conduct clinical trials for this age group, there is still much controversy as to what is or is not right to do, especially ethically, and whether the means justify the ends.

**Keywords:** clinical trials; pediatrics

## ETHICAL ISSUES RELATED TO PHARMACOGENETICS / PHARMACOGENOMICS

***Inês Cortês; Mariana Mendes; Tânia Lourenço; Telma Faria***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Individual genetic variability is one of the most influential factors of drugs response. Therefore, different individuals when medicated with the same drug, could present different therapeutic responses. In this way, pharmacogenetics and pharmacogenomics are the sciences responsible by studying this relationship.

It is intended to promote the reflection of the pros and cons about these sciences, also considering ethical issues that are known.

Our research was based in review articles dated from 2017, master's thesis since 2013 to 2018 and books.

In order to adapt the treatment to genetic characteristics of each individual, it becomes necessary create genetic maps (genes location on chromosomes), DNA sequences (nucleotides order), among others. These procedures can determine if the individual is a poor, intermediate or extensive metabolizer, which consequently allow to increase therapy efficacy.

However, these methodologies have not yet been fully implemented due to scientific, economic, social and ethical issues. In which concerns to ethical issues, it is necessary to define and establish appropriate methodologies for genes collection and storage, ensuring the confidentiality and privacy of personal data.

In conclusion, in the future, it is intended to construct a confidential database that will include genotype, genetic map and DNA sequencing of each individual. Although, it's crucial to define rigorously who could access to this data. Otherwise, if this system would be hacked and data leaked, individuals with genetic variations associated to certain pathologies might be discriminated, losing equal access to health care and health insurance, and may also be prejudicated by the employers.

**Keywords:** Ethical issues, Genes, Pharmacogenetics, Pharmacogenomics

## HYDROLATES

**Ana Luísa; Ana Rita Gonçalves; Vânia Soares**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Hydrolates it's a pharmaceutical form that contains therapeutic properties, aromatic substances and is used by the cosmetics, perfumery and aromatherapy industries. It has a slightly acidic pH, which makes the environment less conducive to the development of bacteria. For its properties to be preserved, it must be kept in a cool place and glass containers tightly closed. It is obtained from the distillation process in the extraction of the essential oils, which consists in submitting the vegetal material to the action of steam in the moment that the essential oil is extracted. During the distillation the steam passes through the tissues of the biomass by dragging the oil inside the glands and other elements of the plant to the condenser where they are cooled until they become liquid. These bind to condensed water that results in hydrolates. Then the hydrolate and the oil are separated in a decanter. The substances are separated by the difference of density and polarity between them. The hydrolates, after separation, are purely extracted and maintain the same volatile components of the plant that raised them. These don't always have the same characteristics as essential oils. There are several types of hydrolates, each with its specific characteristic. They have refreshing and toning properties and are ideal to use in situations that require softness and hydration, especially in children, the elderly and generally sensitive skins. They don't require dilution and can be applied directly to the skin as a component of a moisturizing cream or lotion.

**Keywords:** hydrolates; pharmaceutical form; cosmetics

## **SPIRITS OR ALCOHOLATES**

***Diana Ferreira; Iva Soares; Ruben Costa***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Spirits or alcoholates are galenic formulations obtained by distillation, which result of the extraction and dissolution of one or more fresh vegetable(s) drug(s) by alcohol.

Nowadays, alcoholates can be divided according to their extraction: Ordinary or stabilized. On the first one, the extraction is made in room temperature, while in the stabilized the extractions is made at boiling point.

In the ordinary alcoholates, firstly it's made a 10 days maceration of the fresh fragmented plants in alcohol (using usually the one that has the highest grade due to the aqueous constituents present in the vegetables).

In the stabilized alcoholates the fragmented vegetables are put together with the boiling alcohol in a flask. Lasting between 40 to 60 minutes, this operation is faster than the previous one. This process shouldn't be realized in drugs that suffer enzymatic changes.

The ordinary alcoholates are easier to execute than the stabilized ones, but these are faster and more stable since the alcohol is heated.

Alcoholates are similar to the tincture in the preparation and both are evaluated in identical processes.

Nowadays this pharmaceutical formulation is at disuse, being the lemon peel alcoholate for flavouring the most relevant preparation.

**Keywords:** Alcohol; Vegetable drugs; Alcoholates; Spirits

## ELIXIRS OR SUGARY ALCOHOLS

***Beatriz Almeida, David Muge***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Elixirs or sugary alcohols are alcoholic solutions sweetened with sugars obtained by total dissolution of the substances. It is sometimes necessary to assist this operation with heating, the addition of builders or other sweeteners such as saccharin.

In certain cases, two sweetened solutions of different alcoholic strength (the weak and strong elixir) are used in order to obtain a final vehicle with the desired alcoholic strength, which should range between 15° and 50°.

These solutions present with high conservation properties guarantying protection against microorganisms and avoiding the addition of other preservatives. These solutions are used for gargling and rinsing the oral cavity but not to swallow. Can also be administered orally since it optimizes the dissolution of most drugs as well as providing a pleasant taste.

For their preparation, the active substances are dissolved in the alcohol and water is added in the form of a syrup or a suitable sucrose solution. Glycerin is often used not only because of its sweetening power but also its ability to increase the viscosity of the solution, avoiding precipitation.

The mixture must be packed in specific opaque containers, sealed and kept in a cold environment, protected from light. The use of elixirs are conventionally contraindicated in children under 12 years of age and adults who should avoid alcohol.

Elixirs used to be a galenic form widely used in the past but they have been losing relevance over the years. However, the dentifrices elixirs and the elixir of paracetamol are still extensively used nowadays.

**Keywords:** Elixirs; galenic form; alcoholic solutions; sugars



## FLUID EXTRACTS

***Andreia Rodrigues, Carolina Almeida, Rui Soares***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Fluid extracts are liquid galenic preparations in which a part of the extract corresponds to a dry drug from which it was obtained. These are used in both syrups and energetics, as well as by the phytotherapeutic industries.

This extractive preparation can be standardized for solvent concentrations, constituent content or dry residues, and it also be added preservatives to prevent microbial development.

As for their preparation are obtained by leaching and having a power uniformity. The most commonly used etching fluid is alcohol, which can be of various concentrations depending on the principles to be extracted and the materials to be removed. Water can still be used, but in this case alcohol is still used either as a scrubber or as a preservative. Although leaching is the fundamental operation, there are a number of preparation techniques, which are generally distinguished by the letters A, B, C, D, and E. For the elimination of products without pharmacological interest is used the purification/depuration that is a technique where products such as mucilages, fats, resins and albumins are eliminated. This technique is very important to remove substances that may be harmful to the conservation of the formula or malignant for the patient who uses it.

As for conservation, the extracts should be stored in stoppered glass bottles, protected from light and heat. However, they suffer alterations of several orders that can modify the pharmacological activity.

**Keywords:** Fluid extracts; extractive solution; leaching; depuration

## COMPLEMENTARY PHARMACEUTICAL FORMS OF EXTRACTS

***Daniel Figueiredo; Luís Reis; Luís Ferreira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Extracts are defined as solid pharmaceutical preparations, obtained by concentrating to a certain degree, the solutions resulting from the exhaustion of the medicinal substances by a solvent such as water, alcohol, ether, acetone. In the market several pharmaceutical formulas appear, obtained by extraction of the natural drugs. The preparations that play a prominent role are: fluid or concentrated pseudo extracts, intracts or physiological extracts, energetenes, autolysed, plasmolyzed and hydrolyzed.

Fluid pseudoextracts are liquid preparations, differing from the fluid extracts only because there is no characteristic match between weight or volume of extract and weight of the drug. They are in most cases intended for the preparation of syrups.

In relation to the preparation of the intracts, this includes a stabilization by alcohol vapors, followed by extraction by this solvent. Such a technique of obtaining is intended to extract the active principles without any alteration.

As for the energetenes, they are liquid preparations, obtained by extraction of fresh vegetables with neutral solvents, undergoing all operations in the vacuum and the low temperature.

Finally, autolysates, plasmolysates and hydrolysates, are extractive preparations obtained by autolysis, plasmolysis or hydrolysis of certain vegetable contents, filtered and concentrated to the consistency of thick paste. The preparation by autolysis consists in subjecting the dry yeasts to the action of steam under pressure. In relation to plasmolysis, the yeasts are released in solution of hypertonic sodium chloride, leading to the exit of the principles contained in the cells. The hydrolysates are obtained by acidic hydrolysis of the yeasts, generally presenting as hygroscopic pastes.

**Keywords:** Pseudo-extracts; Intracts; Energetines; Vegetables

## CATAPLASMS

***Ercília Mondlane; Natacha Roseiro; Tatiana Almeida***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Cataplasms are galenic forms formed by “moist and soft masses of solid materials” intended for application on skin to reduce inflammation, eliminate pain and traumatic processes.

This form used to be very used in medicine of the medieval time, the cataplasms were formerly employed in the elimination of purulent material.

The implementation of this pharmaceutical form is quick and simple, being made through the dilution of substances reduced to powder (in water or a vegetable water, wine, infuse or milk), by putting the mixture between two faces of a gauze or a thin cloth. As the nature of the used vehicles is varied, the materials used must be sterile to avoid possible contamination by micro-organisms and to be able to do the application on broken skin, this should not be of direct contact.

The mechanism of its performance level may occur through chemical or thermal mechanisms. The temperature helps speed up the healing process of the human body, but it is also important to have a strict control for the same and if it requires a specific temperature, when the temperature changes the poultice must be replaced.

There are several types of poultices, like flaxseed, mustard and kaolin. Besides these there are the poultices that are composed by "instant portions of tissue or cotton wool impregnated with mucilages". In its application, the poultice must be covered with a waterproof fabric.

Nowadays, this pharmaceutical form is not very popular, and it has been only important for historical context.

**Keywords:** Cataplasms; Poultice; pharmaceutical forms; transdermal medication.

## **SYNAPISMS**

***Cristina Matos; Levi Alves; Ricardo Santos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Synapisms or synaptic papers are similar topical galenic preparations in their action to poultices in which mustard is the main base. They consist of sheets of paper, without glue, uniformly coated on one side with defatted mustard flour and adhered by suitable binding substance.

Mustard flour contains myrosin and myrtonic acid which, upon hydration, release highly irritating allyl sulfocianide. This oily, colorless to light yellow liquid of irritating odor is responsible for extremely rubefacient action. Myrosin loses its effect at temperatures above 60 ° C, which is why its preparation must be carried out in cold or warm water.

The synapisms are used in case of intense pain, congestion of organs, especially the lungs, pleurises and pneumonia, and also to expedite suppurative processes. They can also be used on the calves of the leg and sole of the feet.

To apply the synapses, simply immerse them in warm water and attach them to the appropriate skin area for 5, 15 or 20 minutes or until the skin is red or irritated. After removal of the synaptic, the skin is gently wiped off and if irritation occurs, a topical application of oil or Vaseline is applied and covered with flannel. In substitution of flour, milk or essence, a special paper of practical use, already impregnated with mustard, called Rigolot paper, began to be used. It came in rectangular leaves, which should be placed only in cold or warm water.

Today this galenic form is practically extinct

**Keywords:** Synapism; mustard; poultice; pharmaceutical preparations

## URETHRAL SAILS OR BUGS

***Cristiana Coutinho; Maria Marmé; Marta Prata***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Urethral candles or bugs are a pharmaceutical form with topical urethral action for anti-infective purposes

Initially were prepared with excipients, for example lactose, gum arabic and honey, but they are currently prepared actually with glycerinated gelatin, cocoa butter and semi-synthetic glycerides. As for its appearance this pharmaceutical form has cylindrical form, curled at one end.

Must be solid, but sufficiently elastic to resist deformation that may arise when your application. So, it is possible to understand the use of mixed excipients, such as fats and gelatine, which gives them their elastic characteristic.

Its usual length is 5 or 10 cm, with a thickness of 4-5 mm and an approximate weight of 1g to 1,3-1,5 g, respectively. However, they can take on a longer length and can reach 20 cm.

In its preparation, it should be done in mild heat, always stirring until cooled. The urethral sails should fuse or dissolve rapidly in 37 ° C water, assuming a liquefaction time of 10 minutes.

In its use, these pharmaceutical forms serve to deliver antiseptic drugs, having lost a little interest due to the appearing of sulfamido-therapy and the introduction of antibiotics on the market.

**Keywords:** Sails; Bugs; Pharmaceutical Form; Topical Action; Urethral

## TRANSDERMAL APPLICATIONS

***Adriana Gomes; Beatriz Rodrigues; Beatriz Pedro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

The transdermal medication consists on the application of a pharmaceutical form on the skin, which will lead to the release of the drug. After penetrate skin, it reaches deeper regions or even the bloodstream for a sustained and prolonged systemic absorption, with consequent permanence of the therapeutic effects for long periods of time.

Currently, most of these pharmaceutical forms are composed by drugs that act in the areas of antianginosos, opioid analgesics, antidemencial and anticoncepcionales.

It is of prime importance to apply it on a little hairy region, and gloves should be used so that there is no release of the drug from the person applying it.

Taking into account the release of the drug (s), these are classified into active and passive transdermal systems. In the active an "external energy" is used that assists the passage of the drug through the skin, while in passive the mechanism underlying its permeation is passive diffusion.

Transdermal drugs are presented as adhesives, liposomes, microemulsions and microneedle systems, all with specific features and functions that are taken into account in the development of the formulation.

The cutaneous penetration of the drugs involves the passage through the various skin layers, which is made by diffusion, existing several routes where the drugs reach the systemic circulation, namely the transcellular, intercellular and follicular routes.

There are a number of factors to take into account in the formulation of a transdermal drug and several advantages and disadvantages associated.

The role of these pharmaceutical forms is extremely relevant, as they have revolutionized the potentialities of the skin as a systemic drug delivery route.

**Keywords:** Transdermal preparations; Systemic absorption; Cutaneous penetration

## MELLITUS

***Cátia Silva; Diana Guerra; Mariana Rodrigues***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Mellitus is a liquid saccharide included in the pharmaceutical forms, obtained through molecular dispersion. They are liquid pharmaceutical forms, of consistency close to syrups, because of the large percentage of honey dissolved in water. Oximelites are similar, although they contain vinegar.

They are prepared by dissolving the honey in water (simple methyl) or in an aqueous solution, followed by clarification, usually made with paper pulp, whether or not the process is adjuvanted with adsorbents, such as kaolin, magnesium carbonate or calcium carbonate. Its density at 15 ° C is 1.32 and at boiling point is 1.26.

For its preparation the kaolin is stirred with 200 g of water and the honey is added to the remaining water, then this preparation is boiled and filtered. During the boil it is evaporated until the density is 1.26.

The fact that these pharmaceutical preparations are handled medicinal products have some benefits, such as the possibility of adjusting the therapy to the specific physiological profile of each patient. From the pharmacological point of view it's an alternative to industrialized medicines, for cases of intolerance to certain excipients and associations of active substances not available.

Saccharos have some advantages: they confer energetic value, they play a sweetening and preservative function, they present high viscosity, preventing turbidity or precipitations. However, they have disadvantages: they can't be used by diabetics, they have a high caloric intake and are cariogenic (risk of dental caries).

Currently, mellitus is used only as a vehicle, not having a specialized function.

**Keywords:** Mellitus; Liquid saccharide; Liquid pharmaceutical form

## OVULES

**Ana Guedes; Beatriz Loureiro; Inês Ferreira**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Ovules are an ovoid-shaped pharmaceutical preparation, sometimes olivars, with a solid consistency, usually soft, destined for vaginal use. It can also be designated as vaginal suppositories, vaginal balls, vaginal cones or pessaries. Its weight varies between 2 and 16 g and contain a unit dose of one or more active substances.

Their preparation is alike the suppository preparation, through a fusion process, since the compression method is not suitable for making ovules given their ovoid or olive shapes. The drugs are dissolved or dispersed in the liquefied hydrodispersible excipient, such as glycerol-gelatin, and less often in the fatty intermediates, and the obtained paste is cast into suitable molds.

Among the drugs administered in the form of ovules are mercurochrome (antiseptic), tannin, alum and zinc sulphate (astringents), opium and belladonna derivatives (soothing), potassium iodides and mercury (resolving), antipyrine and rye ergot extract (anti-hemorrhagic), allantoin (cicatrizant), ictiol and tumenol (keratoplastics), penicillins and sulphonamides (bactericidal and bacteriostatic), certain hormones, etc.

Usually, the active substances in the ovule are expressed as percentage and not per unit of pharmaceutical form, as with suppositories.

With time the ovule became less important, being replaced by the vaginal tablets, which are currently the most widely used pharmaceutical formulation.

**Keywords:** Ovules; Vaginal Use; Pharmaceutical Formulation



## ENOILS

***Kelly Correia; Mariana Esteves***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Wine is part of our culture for a long time, not only in dining matters but also in medical issues such as enoils.

Enoils or medicinal wines are pharmaceutical forms obtained by the dissolution of medicinal principles in wines. The origin of the enoils is lost in time, having constituted for many centuries, a galenic form of election.

However, the appearance of the tinctures and their better conservation and higher potency came to put the wines in a secondary plane. The 1902 Brussels International Conference is also responsible for the lack of interest that has been accentuated by these preparations, since it was established in it that very active drugs should not be used to prepare medicinal wines.

These preparations are still widely used today by older people as a kind of "home remedies" and are commonly taken to cure impotence, varicose veins, diabetes, uric acid, flu, cough, muscle aches, anemia and other diseases.

Currently, pharmacopoeias have greatly reduced monographs dedicated to enoils, which, in some countries, are no longer considered official forms.

**Keywords:** Enoils; Wine; Maceration

## ACETOLS AND ETHEROLS

***Adriana Sousa; Mariana Carreira; Rita Santos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Acetols and Etherols are pharmaceutical forms obtained by simple or extractive dissolution, belonging to the solutions.

Acetols, also known as medicinal vinegars, are preparations very similar to medicinal wines, with water and acetic acid being the major solvents of the substances. They are prepared in the cold, mainly by maceration and less times by simple dissolution or until mixture, being pharmaceutical forms obtained by dissolution of the medicinal principles in the vinegar of white wine. Vinegar is very little used in pharmacy and results from the acetic fermentation of white wines, which is a good diluent of polar substances. Acetic acid under environmental conditions is liquid and has properties as sour taste, irritant, strong odor and yet be reactive and soluble in water, ether and alcohol.

The preparation of acetols has some rules, which state, among others, that distilled wine vinegar or acetic acid must be used.

Ether oils are liquid pharmaceutical forms which the main parent is sulfur ether. They can be obtained by simple dissolution (alcoholic sulfuric ether, elastic collodion) or extractive dissolution (tincture of aceto-ethereal cantharides, ethereal tincture of valerian). An example of a more commonly known simple dissolution is the Elastic Collodion, used in the form of protective films on wounds or ulcers.

Acetols and ether alcohols represent galenic groups of very restrict interest, for various reasons, but especially their poor conservation.

**Keywords:** Acetols; eterols; solutions; medicinal vinegars; sulfur ether

## OILS

***Inês Alves; Inês Figueiredo; Sílvia Fernandes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Oils or medicinal oils are pharmaceutical forms obtained by simple or extractive dissolution of medicinal principles in a fixed oil (olive oil, almond oils, cod oil, sesame, soy, peanut, cotton, sunflower). They are pharmaceutical forms obtained by molecular dispersion.

These preparations are applied for internal and external use.

The preparation of the oils is by hot dissolution and by digestion at 60/70 ° C. No higher temperatures are advisable. The principles that are dissolved are fragile and the oil itself can undergo some changes like oxidations or hydrolysis.

As examples of oils prepared by simple dissolution we have camphorated oil, Niauli essence oil and Menthol oil. Through digestion there is the oil of Belladonna, the oil of Chamomile and the oil of Meimbro and Composite Meimbro.

There are assays to evaluate the oil, such as its density or viscosity or to evaluate the identification and dosage of the medicinal principles.

Oils are less susceptible to changes than aqueous or alcoholic solutions, but these must be renewed annually because they age and lose their pharmacological properties.

Oils are preparations that have been used for a long time but are in disuse, since for the therapeutic uses for which they are used there are already substitutes.

**Keywords:** Oils; medicinal oils; molecular dispersion; extraction; digestion

## VAGINAL INJECTIONS

***Andreia Louro; Lúcia Pereira; Tatiana Vieira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Farmácia, Coimbra, Portugal*

Vaginal injections are irrigation of several fluids in the vagina. These are administered as enemas through straight or curved cannulas made of glass, ebonite, hardened rubber, among others.

There are various cannulas and probes for vaginal irrigation, such as Nélaton and others made of rubber. And some cannulas with double chain and may have shutters to allow effective irrigation.

The vaginal irrigation consists of washing the vagina with the insertion of a fluid under low pressure. Its purpose is the hygienisation in order to remove an offensive or irritating substance, reduce inflammation and prevent infection.

The irrigation is also used for the administration of antiseptic and astringent substances, using volumes of about 1 liter.

The preferred solvent is boiled water, and can be used partially or completely macerated or infused.

Sometimes extemporaneous preparations are prescribed as powders which must be dissolved in boiled water, for example, sodium bicarbonate, zinc sulfate, copper sulfate, picric acid.

Similar to vaginal irrigations there are uterine injections strictly to medical application.

**Keywords:** Vagina; Vaginal injections; Vaginal irrigations

## ASSOCIATION BETWEEN EATING HABITS AND WEIGHT OF UNIVERSITY STUDENTS

***Marta Martins, Tânia Lopes, Sandra Fernandes, Tatiana Almeida, Filipa Costa***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** The beginning of the university coincides with changes in lifestyles and new social challenges and responsibilities. Often, for the students leaving the house where they live, it is the first time they have acquired and prepared food. Thus, this is a critical period for changes in eating habits in terms of variety, frequency and time of consumption.

**Objective:** To relate eating habits to overweight and obesity among university students.

**Methods:** Analysis of articles published in PubMedCentral online database until March 1, 2018, using the keywords: "university students", "university students", "obesity", "overweight", "overweight" "Weight", "weight", "higher education", "university", "academy", "college" and "university", and using the filters: human study articles, free full text, adults (19-24 years).

**Results:** Gender seemed to influence the frequency of consumption of many foods and women showed a more balanced diet. Students living in their parents' homes generally had a growing trend for leisure activities and a diet rich in fruits, vegetables and fish and poorer in fast food, soft drinks, and alcohol than those who lived far from home.

Students who attend a more advanced academic level appear to have healthier preferences regarding the types of beverages between meals, cooking methods, coffee and tea consumption when compared to lower-level students.

Overall, 84.5% of students reported dietary changes since entering university.

**Conclusion:** This analysis allowed to verify that there are alimentary changes in the students of higher education, observing a higher prevalence of unhealthy eating habits and consequently a greater prevalence of obesity.

**Keywords:** university students, university, obesity, weight, eating habits

## PREVALENCE OF CHILDHOOD METABOLIC SYNDROME

***Andreia Nascimento; Bárbara Alexandre; Mafalda Eulálio; Maria Rosa; Mariana Pinto***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Metabolic syndrome occurs when several metabolic factors are altered, such as obesity, dyslipidemia, hyperglycemia, hypertension, insulin resistance, hemostatic changes, oxidative stress and chronic inflammation.

There are discrepancies in the definition of this pathology at the pediatric level, since while the International Diabetes Federation considers that MS should not be diagnosed before 10 years of age, other authors define the criteria for this syndrome that should be used in childhood. Due to the rapid development of biological characteristics in children, there is a lack of universally accepted definitions for Childhood Metabolic Syndrome.

Methods: Research and analysis of articles published in the PubMed database, since April 2010 that describe the prevalence of Infant Metabolic Syndrome.

Results: Nine articles were considered eligible to know the prevalence of Childhood Metabolic Syndrome in different countries. This pathology is a major public health challenge because its prevalence is 31% and is associated with a twofold increase in the risk of coronary heart disease, cerebrovascular disease and 1.5 times the risk of mortality by all causes.

Conclusion: It seems to be of great value to be carried out an early screening of metabolic changes of obesity in childhood and adolescence and early intervention strategies of weight control, since as these results can be reversed if health risks are identified and treated early in life.

**Keywords:** metabolic syndrome; paediatric; childhood; puberty; prevalence

## LOW-CARBOHYDRATE DIETS AND SPORT PERFORMANCE

**Beatriz Santos; Carlota Gonçalves; Karin Varela; Sara Beato**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Nutrition plays a crucial role in athletic performance because it is by this means that athletes obtain the essential nutrients for good performance in training and competitions. The intensity, the rhythm and yield of exercise decreases as the levels of glycogen decrease. This systematic review aimed to summarize the existing scientific literature on PubMed on the association between low-carbohydrate diets and the performance of high performance athletes. Methods: Search of articles in English, was held from the online database PubMed until April 2016. We extracted data on the type of study, participants, assessment tools and main results. Results: Six studies were included for analysis. From the analysis of the studies described was found, mostly, there is an association between low-carbohydrate diets and the performance of high performance athletes. Conclusion: We can conclude that although not all studies directly relate the two variables, there are no benefits in sports performance with the adoption of hypoglycemic diets. On the contrary, in some cases, we see a decrease in sports performance in high intensity exercises.

**Keywords:** nutrition, food intake, exercise, low-carbohydrate, performance.

## **CAPACITY OF THE VEGETARIAN DIET TO SUPPLY THE NEEDS OF HIGH COMPETITION ATHLETES**

**Ana Beatriz Rodrigues, Inês Santos, Lara Faria, Marisa Rodrigues, Teresa Ferreira**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: Nowadays, lots of people exclude animal sources, due to religious beliefs, culture or even health reasons, are named vegetarians.

Vegetarian athletes, based on the type of sport practiced, especially in periods of high intensity or long duration, have specific energy and nutrient requirements in order to maintain body weight, health and maximize results.

Objective: This systematic review aims to analyze whether vegetarian diets have the capacity to supply the energy needs of high intensity athletes and their effect on sports performance.

Methods: An article research was made in PubMed database, until 19/03/2018.

Results: Six articles were considered eligible to verify that the balanced and complete vegetarian diet provides the total nitrogen and essential amino acids, energy and macronutrient needs necessary for athletes to achieve good sports performance. The studies analyzed shown that the choice of a vegetarian diet doesn't interfere with sports performance.

**Keywords:** Nutrition; Vegetarian; Performance; High competition



## **MILK CONSUMPTION AND OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN**

***Ana Monteiro, Andreia Vieira, Francisca Magalhães e Maria Damas***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Osteoporosis is a systemic skeletal disease, characterized by a decrease in Bone Mineral Density with an increased risk of fractures. In type I, known as postmenopausal, there is rapid bone loss. Milk, a food rich in calcium, vitamin D, lactose and protein and easily accessible to the entire population, can be a way of preventing the occurrence of osteoporosis.

The aim of this review was to analyse articles that study the benefits of milk consumption in the prevention and treatment of osteoporosis in postmenopausal women. An article search was performed through the PubMed online database until March 27, 2018, using the following search term: Milk AND Osteoporosis OR "bone loss" OR "bone mineral density" OR "Osteopenia" AND " Menopause "OR" postmenopausal ".

Three articles were considered eligible to verify that there are associations between low milk intake and the development of postmenopausal osteoporosis. Milk consumption becomes an important factor in the prevention of osteoporosis which, due to its nutritional characteristics, will increase BMD and bone strength and decrease the development of osteoporosis.

**Keywords:** Milk AND Osteoporosis OR "bone loss" OR "bone mineral density" OR "Osteopenia" AND " Menopause "OR" postmenopausal ".

## **MENTAL ILLNESS: EXCLUSIVE DIET AS A FORM OF PREVENTION**

***Ana Morgado, Ana Tavares, Beatriz Norte, Nádía Martins***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Nowadays, the incidence of mental illnesses is increasing at a high pace, so there have been developed several studies in order to understand which factors are involved in the prevention of these diseases.

Aim: This study intends to understand if there is a specific diet to prevent the appearance of mental illnesses.

Materials and methods: It were searched articles in the databasePubMed, until 12th April, 2018 , that evaluated the relation between the individual's diet and the prevention of mental illnesses, using thekeywords: "diet", "mental illness", "nutrition", "prevention" and "treatment".

Results: Five studies were analyzed and those studies presented a total of 1400 participants, all of them adults, of both sexes and of any BMI class. Among these individuals there were some healthy and some with an high susceptibility of developing chronic diseases.

Conclusion: There are several bioactive compounds, such as sterols, phenolic compounds, carotenoids, polysaccharides, vitamins and minerals, present in functional foods that appeared to have the capability of reducing the risk of developing mental illnesses. A diet composed by functional foods, dietary supplements and nutraceuticals it has been proved to be an effective therapeutic intervention in the prevention of mental illnesses.

Even though, there is not a medical intervention capable of preventing mental illnesses, it has been proved that an improvement on people's lifestyle, specifically in their diet can be protective factor against this pathology.

**Keywords:** Diet, mental illness, nutrition, prevention and treatment.

## **TYPE 2 DIABETES PREVENTION AND TREATMENT PROGRAMS**

***Cátia Pereira, Eduarda Carreira, Joana Cunha, Mara Coelho, Mónica Lopes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Diabetes Mellitus is a chronic disease known for 3,500 years. Considered a true epidemic, being a common cause of hospitalization. This disease doesn't have a single transverse definition and it's characterized by a persistent hyperglycemia. Hyperglycemia occurs because of lack of insulin or resistance to that hormone. The lack of insulin causes acute and chronic metabolic changes that lead to serious pathological conditions in various tissues and organs. Diet is an essential factor for the prevention and treatment of Diabetes, so it's essential to establish nutritional therapeutic programs for the prevention and treatment.

For the purpose of this study, we used the studies that appear in the PubMed database that explain the effects of the nutritional treatment programs for type 2 diabetes.

The search was made based on several articles using the PubMed database as of 19/03/2018, using the following terms: "Diabetes\*" AND "Prevention\*" OR "Protection\*" AND "Treatment\*" OR "Therapy\*" OR "Programs\*" OR "Care\*" AND "Baby\*" OR "Child\*" OR "Infant\*" OR "Pediatric\*" AND "Diet\*" OR "Nutrition\*" OR "Food intake\*".

We included X studies that allowed to verify that the programs of prevention and treatment of the DM2 that affect the lifestyles, in particular eating habits and physical exercise, improve the risk factors or prevent complications associated to the disease.

**Keywords:** "Diabetes", "Prevention", "Therapy", "Child", "Diet"

## INFLUENCE IF DIETARY RESTRICTION IN PREGNANT WOMEN AND NEWBORNS

***Eduarda Costa, Vera Gonçalves***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Nowadays, gestational diabetes mellitus (GDM) incidence has been increasing recurrently among pregnant women. This fact can be explained by the growth of risk factors, such as, the high ingestion of sugars, processed food products, sedentary lifestyle, obesity and many others.

However, the studies conducted referring to this condition are scarce and therefore it is need more research in this area.

It is known that the maternal health has an huge impact on the newborns health, due to this it is very important to adequate the woman diet during the pregnancy.

Aim: This study intends to understand if there is a specific relation between dietary interventions with nutrient restrictions in pregnant women with gestational diabetes mellitus and their health.

Matherials and Methods: It were searched articles in the database PubMed, until 18th April, 2018, that evaluated the restriction of nutrients impact in pregnant women with gestational diabetes mellitus health, as well as, in their newborns health status . This search was conducted using the keywords: "diet", "nutrition", "energy restriction", "low calorie" and "pregnant".

Results: Two studies were analysed and those studies presented a total of 926 pregnant women with diabetes type I or II and whose average age was 31,5 years.

Conclusion: A restrictive nutrient and energetic diet appeared to act as a protective factor in the pregnant women health, as well as their newborn, decreasing parameters as the hepatic tryglicerides level and the less frequent use of insuline.

**Keywords:** Diet, nutrition, energy restriction, low calorie and pregnant.

## **HIPOLIPIDIC DIETS IN WEIGHT LOSS IN OBESE INDIVIDUALS WITH TYPE 2 DIABETES AND ITS IMPACT IN GLYCEMIC CONTROL**

**Ana Jorge, João Lé, Marisa Pereira, Marta Figueira**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Type 2 Diabetes is a chronic disease with a multifactorial etiology characterized as a serious public health problem and is deeply related to obesity and overweight. Hereupon weight loss associated with glycemic control has been increasingly promoted by individuals in order to maintain this pathology controlled.

This systematic literature review aims to evaluate the relation between hypolipidic diets and the reduction of body weight in diabetic and obese individuals, as well as their impact on glycemic control.

An article research was made using the online search tool PubMed Central, until March 28th 2018, using the expression «diet or nutrition or “food intake” and hypolipidic or hypolipid or hypolipidemic or “low fat” and “weight loss” or “weight reduction” or “decrease of weight” and “diabetes type 2” or “diabetes mellitus type 2” or “DM2” or “ type 2 diabetes” and “blood glucose control” or “impact on blood glucose” or “glycemic control”», that analyzed the relation between hipolipidic diets and weight reduction, in diabetic and obese individuals, as well as their impact in glycemic control.

From the results analysis was possible to verify that there is a relation between lifestyle changes, especially regarding the diet, weight loss and glycemic control, being that the 3 studies analyzed obtained positive results for the two mentioned parameters, independently of the evaluated diet. However, it is not possible to say with certainty that the hypolipidic diets are the most indicated in the case of diabetic and obese individuals, because in this regard the results have been inconclusive.

**Keywords:** Diet, hypolipidic, weight loss, diabetes type 2, glycemic control

## FOOD AND BREAST CANCER

***Tatiana Almeida, Sandra Fernandes, Filipa Costa, Tânia Lopes, Marta Martins***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Carcinogenesis involves two phases: initiation and promotion. Chemotherapy is one of the main treatments for breast cancer, being associated with cytotoxic substances that affect the perception of taste, smell and food intake. The relation between nutritional knowledge and cancer is done in two phases: nutrition in the etiology of cancer and nutrition in cancer patients.

Methodology: Scientific database such as ScienceDirect and Pubmed were used to search the words "food" and "breast cancer", limiting to scientific papers published in 2017.

Results: In the Harris HR article, women who consumed more food that induce inflammation, during adolescence, had a higher BMI. In addition, there was a higher index of inflammatory dietary patterns in adolescents and the incidence of premenopausal breast cancer. In a second study, it was observed that women living in villages and countryside were associated with a lower risk of breast cancer. According to Romieu I, the fibers had a protector effect in cancer even when consuming alcohol. In a fourth study, which compares four eating patterns, it has been observed that the Chinese and sweet standards have a protective effect on this cancer. The relationship between food intake and chemotherapy reveals that food taste and availability were the main determinants of food choices. In the Vries YC study, different dietary preferences were observed at different stages – before appearance of cancer and during chemotherapy.

Conclusion: Nutrition is a crucial factor in the prevention of breast cancer. It also plays an important role during chemotherapy.

**Keywords:** Food, cancer, breast

## **CANCER AND DIET: COLORECTAL**

**Ana Monteiro, Andreia Vieira; Bárbara Alexandre; Francisca Magalhães; Maria Damas; Mariana Pinto**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** Given that manipulated and refined foods are largely responsible for imbalances in the internal environment that lead us consequently to new cancers, colorectal cancer (CCR) is one of the leading causes of cancer death in the world. It is the result of a multifactorial process, with diet being an important risk factor.

**Objective:** It is intended to relate the prevalence of CCR to eating habits, with emphasis on preventive and causative foods.

**Methods:** A review of the literature was conducted through research databases such as "PubMed", "SciELO" and "Google Scholar".

**Results:** A cancer protective diet should include the fibers of vegetables, pulses and fruits, high in healthy fats from oilseeds, avocado, coconut oil and olive oil, low in animal protein, sugar and fast-absorbing carbohydrates. It is also important to maintain a recommended weight, exercise at least 30 minutes a day, reduce alcohol and salt intake, sleep 7 to 8 hours a night, be exposed to about 20 minutes of sun a day, not smoke and decrease the levels of stress.

**Conclusion:** We conclude that it is imperative to carry out multidisciplinary educational programs in which nutritionists, physicians, physical education professionals, among other members of the health area, with the purpose of guiding patients in improving their quality of life and reinforcing healthy habits in order to decrease the incidence of cancer development.

**Keywords:** diet; colorectal cancer; prevention

## **BREASTFEEDING AS A PROTECTIVE FACTOR AGAINST OBESITY**

***Ana Morgado, Ana Tavares, Ana Jorge, Marisa Pereira, Marta Figueira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** Obesity is a serious concern that has assumed alarming proportions and is associated with negative consequences on the health of individuals. Therefore, several aspects that may have a protective role against this pathology, such as breastfeeding, have been analysed.

**Aim:** This study intends to identify whether there is a relation between being breastfed in childhood and the probability of becoming obese in adulthood, or not.

**Materials and methods:** It was conducted a review process, using scientific databases using the following terms: “breastfeeding”, “breast milk”, “obesity” and “IBM” and select the most relevant articles found. We also conducted an investigation recurring to a questionnaire survey, applied randomly to 100 people. Afterwards we treated the data using the program SPSS-Statistics.

**Results:** From the statistical analysis performed, we found that, within the sample surveyed, there is a significant prevalence of obesity, although most of the data point to normal BMI values. In addition, there is a relationship between the BMI of the subjects and whether or not they have been breastfed.

**Conclusion:** According to the variables analysed, it is possible to affirm that breastfeeding actually has a preventive effect regarding the risk of developing obesity in adulthood, although several results obtained have been inconclusive.

**Keywords:** Breastfeeding, breast milk, IBM and obesity



## OBESITY EVOLUTION

***Ana Beatriz Rodrigues, Inês Santos, Lara Faria, Marisa Rodrigues, Teresa Ferreira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Before prevent or treat any disease, it's important to know its origin. Obesity is a serious health problem in developed and developing countries, considered by the World Health Organization (WHO) in 1997 as a global epidemic and one of the greatest public health challenges of the early 21st century. According to the Direção Geral de Saúde (DGS) and the WHO, this is a disease where excess body fat can affect health. It is a chronic, non-transmissible disease with a multifactorial genesis, which requires continued efforts to be controlled.

With the evolution of man over time in various areas, such as the discovery of fire, animal domestication and the improvement of farming techniques, there was greater access to food, which promoted the consumption of saturated, rather than unsaturated, fats.

There are several factors that culminate in the genesis of obesity, namely parents' education level, sedentarism, the degree of urbanization of the place of residence, physical activity, genetic and environmental factors, geographic differences, eating habits, technological evolutions and socio-cultural and economic factors.

Globally and at regional level, there are disparities in pre-obesity and obesity values.

The main negative consequences of obesity are reflected at the physical, mental, or even social level.

The analysis of the temporal trend of obesity reveals an increasing risk of this disease throughout the world. This disease has a greater prevalence, when compared with malnutrition and infectious diseases. For this reason, unless drastic measures are taken to prevent obesity, more than 50% of the world's population will be obese by 2025.

It is extremely important to change eating habits and increase physical activity to overcome this public health problem.

**Keywords:** obesity, evolution, diet

## **KOUNIS SYNDROME**

***Marisa Antunes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Kounis syndrome is a rare cause of coronary syndrome, corresponding, at the same time, to allergic reactions and to acute coronary events secondary to vasospasm. Adjacent pathophysiology is based on a hypersensitivity reaction caused by an allergen associated with a strong immune reaction. I present a clinical case of Kounis syndrome secondary to the administration of ciprofloxacin, which develops a clinical picture suggestive of acute coronary disease with ST-segment elevation.

**Keywords:** Kounis syndrome, allergy, acute coronary syndrome.

## WELLENS SYNDROME

***Catarina Alcântara***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Wellens Syndrome (SW) is characterized by electrocardiographic alterations of the T wave showing severe occlusion of the anterior descending coronary artery, It may also be called Anterior Descending Coronary Artery Syndrome. Patients who present this syndrome, when kept in clinical treatment have a high risk of acute myocardial infarction of the entire anterior wall, which can ultimately lead to death. Due to the seriousness of the consequences of this syndrome, it is very important to know its variants as well as the clinical and electrocardiographic criteria.

**Keywords:** Wellens Syndrome; coronary artery; eletrocardiography; acute myocardial infarction.

## **WOLFF-PARKINSON-WHITE SYNDROME**

***Beatriz Pedroso***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Wolff-Parkinson-White syndrome is characterized by a congenital pattern, where changes occur in the electrical system of the heart. A heart bearing this syndrome has an abnormal accessory electrical pathway, via Kent, between the atrium and the ventricle, resulting in arrhythmias and tachycardia. Most patients present asymptomatic, but sometimes supraventricular tachycardia and chest pain appear.

This study includes the clinical case of an asymptomatic 23-year-old cyclist whose electrocardiogram revealed changes related to WPW, such as short PQ interval, delta wave presence in all leads and extended QRS. The study was carried out with transthoracic ECO, stress test and Holter 24 hours.

**Keywords:** Syndrome; Wolff-Parkinson-White; delta wave.

## BAYÉS SYNDROME

**Vânia Brandão**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

The Bayés Syndrome has been studied since the 70's, but only very recently it was confirmed as a clinical condition. Bayés Syndrome is characterized by the presence of advanced inter-atrial block associated with the appearance of supraventricular arrhythmias, particularly, atrial fibrillation and atrial flutter, being determined as an arrhythmological syndrome. Potentially fatal, this disorder is defined electrocardiographically as a prolonged P wave duration (> 120 ms) with biphasic morphology in the inferior leads and can be categorized into first, second and third-degree inter-atrial block. It has also been identified as a probable risk for other pathological processes such as cardiac chamber enlargement, ischemia or cerebrovascular accidents. Advances in technology have allowed for more accurate observations, increasing the possibilities for therapy and providing insight into the risks and prevention of the possible future complications. Bayés Syndrome is a poorly recognized cardiac rhythm disorder with significant cardiologic and neurologic implications.

**Keywords:** Bayés syndrome, inter-atrial block, supraventricular arrhythmias, cardiovascular risk factors.

## SHORT QT SYNDROME (SQTS)

***Inês Pavão***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Short QT Syndrome (SQTS) is a rare inherited cardiac channelopathy without structural cardiopathy, associated to the atrial and ventricular tachyarrhythmia fibrillation. As the name indicates the carriers of this syndrome have a short duration of QT visible on an electrocardiogram. This syndrome is one of the causes in sudden infant death syndrome (SIDS) occurring in the infant's first year of life and in apparently healthy youth. This study's objective is the search for parameters that help to estimate the risk and collect data about markers that permit an evaluation of the prognosis of those patients. Previous symptoms, family history of sudden cardiac death, specific electrocardiogram and genetic characteristics are the current markers available for risk stratification. In this syndrome sudden cardiac death being a possible first manifestation it is important to have a high level of suspicion to lead to an early diagnosis and treatment. Also, knowing the family may increase the level of suspicion and allow for an early referral to a specialist. In spite of the progress made in understanding the relationship between genotype-phenotype and its implications, the criteria for diagnosis, the risk stratification for cardiac sudden death and the orientations for the treatment of Short Congenital QT Syndrome have not been completely achieved. As the threat of sudden death remains even in patients with low risk, many doctors favour the implantable cardioverter defibrillator (ICD) as a measure of prevention.

**Keywords:** Sudden cardiac death; implantable cardioverter defibrillator.

## JERVELL Y LANGE NIELSEN SYNDROME

**Beatriz Monteiro**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Jervell and Lange-Nielsen syndrome (JLNS) is one of the types of long QT syndrome (LQTS). Is a congenital hereditary disorder characterized by a prolongation of the QT interval on electrocardiogram, profound hearing loss and a propensity to ventricular tachyarrhythmia, which may lead to syncope, cardiac arrest, or sudden death. Torsade de pointes is considered to be the arrhythmia responsible for syncopal episodes which itself may lead to sudden cardiac death characterized by abnormally prolonged ventricular repolarization occurring mainly during physical or emotional stress. The occurrence of syncopal episodes is typically associated with sudden increases in sympathetic activity, such as those occurring during intense emotion (particularly fright, but also anger) or physical activity or even a sudden loud noise (alarm clock, telephone, thunder) is the definitive trigger for some patients. This syndrome is most of the times characterized as congenital and if is not treated in time can cause dead before 15 years old, but there are some rare cases where can be acquired by drugs/medication. The most severe complications can be prevented with the use of antiadrenergic treatments.

**Keywords:** Jervell and Lange-Nielsen syndrome , long QT interval , profound hearing loss, autosomal recessive disease.

## YAMAGUCHI SYNDROME

*Raquel Pedro*

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Yamaguchi syndrome, also known as Apical hypertrophic cardiomyopathy, is a rare form of hypertrophic cardiomyopathy that has manifestations on the apex of the left ventricle, and occasionally right ventricle. This was first reported, in Japan, by Sakamoto (1976) and Yamaguchi (1979). It is described as non-obstructive hypertrophic cardiomyopathy and characterized as negative T waves with greater than 10 mm (1- mV) amplitude in precordial electrocardiographic leads (V2-V5) associated with an angiographic spade-shaped appearance of the left ventricle, at end-diastole. More recently has been described in non-Japanese patients, although less commonly, it is more often associated with hypertension and family history of hypertrophy in these cases than it is on Japanese population. The Yamaguchi syndrome has been reported in few families with autosomal dominant inheritance. The prognosis is usually benign in terms of cardiovascular mortality. The normal symptoms are angina, atypical chest pain, palpitations, dyspnea and fatigue, but the patients can also be asymptomatic. One third of population could develop adverse clinical events including myocardial infarction, congestive heart failure and atrial arrhythmias.

**Keywords:** Yamaguchi Syndrome, apical hypertrophic cardiomyopathy, negative T waves.



## BRUGADA SYNDROME

***Paulo Mateus***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Brugada Syndrome is a phenomenon characterized by the presence of polymorphic ventricular tachycardias / ventricular fibrillation in the absence of any structural cardiopathy. This condition incapacitates the heart to provide a blood circulation capable of meeting the requirements of the organism, due to the very high frequency of the ventricular contraction, which can lead in last instance to sudden death. It`s a pathology with a higher incidence in males, appearing more frequently between the third and fourth decade of life. The objectives of this work are the approach to diagnosis, study of the underlying pathophysiology and available treatments related to this syndrome. The diagnosis is made based on the clinical history of the patient, reports of syncope, cardiac arrest or previous family history of sudden death and the symptomatology of the patient. In the electrocardiogram its verified an elevation of the ST segment in the precordial leads V1 and V2. Brugada Syndrome has a hereditary component, autosomal dominant disease, associated with a mutation of the SCN5A gene involved in the functioning of the sodium channels of the cardiac muscle. In the treatment antiarrhythmics are commonly used and the implantation of automatic defibrillators (CDI) are also a running practice. Recent studies point to the ineffectiveness of antiarrhythmics in the treatment of this condition, with documented cases of sudden death. The incidence of Brugada Syndrome is estimated to be 5 to 10,000 people. It`s estimated that this syndrome is responsible for 4 to 12% of sudden deaths cases in total and for about 20% of deaths in patients without any structural heart disease or other previous cardiac disease.

**Keywords:** Brugada Syndrome, diagnosis, pathophysiology, treatments.

## **METABÓLIC SYNDROME**

***Raquel Vicente***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Metabolic syndrome is a set of risk factors originating in the lifestyles of the 21st century só its prevalence has been increasing.

Some of the harmful activities of this lifestyle are associated with the food industry, the excessive consumption of fats and sugars and the lack of practice of physical exercise, the designated sedentarism, another reason is the smoking that has been increasing in the female sex and the decrease in males.

As a consequence, there was an increase in overweight / obesity and in the installation of physiological and metabolic changes in the population.

Metabolic syndrome, then, is one of the consequences of all these risk factors based on metabolic obesity and insulin resistance.

This syndrome increases the likelihood of developing heart disease, strokes and diabetes.

For diagnosis, 3 parameters of the 5 present have to be present: Abdominal obesity, quantification of triglyceride values, quantification of HDL cholesterol values, blood pressure, blood glucose.

This syndrome has no symptoms and has as its only sign a prominent abdomen.

**Keywords:** Metabolic Syndrome; sedentary lifestyle; resistance to insulin.

## **EL-SHERIF SIGN**

### ***Rui Novo***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

The presence of a rSR' complex, or similar, in the medium derivations or in DI indicates the existence of a ventricular aneurism ( El-Sherif sign). The rSR' complex is the presence of a small R wave, followed by a deep S wave and a second high R wave (R'). It is characteristic of a right bundle branch block and an incomplete right bundle branch block. A right bundle branch block happens when the right branch is not capable of conducting the electrical stimulus so the depolarization of both ventricles is made by the left branch. As said before, the El-Sherif sign may be defined as an indicator of a ventricular aneurism, being that the main sign to consider is a rSR' complex. In its turn, a ventricular aneurism is a dilation of a part of the left ventricle resultant of the cicatrisation of the lost of musculature consequent to a myocardial infarction or a infectious myocarditis. Currently the main cause of formation of a ventricular aneurism is the myocardial infarction itself, which destroys part of the ventricular wall, leading to healing/cicatrisation by fibrous tissue."

**Keywords:** Ventricular aneurism.

## VASOVAGAL SYNDROME

**Félix Basto**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Syncope is defined as a sudden and brief loss of consciousness and postural tonus due to cerebral hypoperfusion. Vasovagal syncope is the most common cause of syncope among all etiologies. The incidence may range from 21 to 35% and this condition usually affects young, healthy people. Its pathophysiology has not been elucidated yet, and it may be due to vasodilation and reflex-mediated bradycardia. Some studies have been carried out as an attempt to find better therapeutic approaches for this dysautonomy which is often resistant to the treatments suggested. Pharmacological agents have been used, but the efficacy has not been fully proven and adverse effects are common. Currently, there are few randomized studies and most of them involve small samples. Therapeutic measures have been suggested to prevent relapses, including general non-pharmacological approaches such as recognizing the symptoms and the triggering factors, programs of physical and postural training, increase in the water and salt intake. Some findings suggest there is an influence of salt supplementation in the clinical parameters of vasovagal syncope. The mechanism that prevents syncope using salt administration has not been completely understood, although its efficacy is attributed to the expansion of the extracellular volume. Salt supplementation can increase body weight, plasma volume, orthostatic tolerance and blood pressure in the upright posture. However, a specific subgroup of people who presents with symptoms that are not appropriately controlled need pharmacological and non-pharmacological intervention. In general, good therapeutic results are achieved with changes in diet and behavior.

**Keywords:** Vasovagal syncope, salt supplementation, orthostatic tolerance.

## DE WINTER T WAVES

**Rita Castro**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

The Winter ECG pattern is characterized by the occlusion of the proximal left anterior descending coronary artery. In the ECG we can observe an ST segment elevation between 1 and 3mm, a depression at the J point in leads V1 to V6, followed by a symmetric and apiculated T wave in the unipolar precordial leads (horizontal plane). In the majority we are speaking about young people, mainly men, despite the cause is unknown some theories suggest some anomaly that causes a delay in the Purkinje cells conduction. Patients with de Winter T waves are indicated to urgent coronary angiogram.

**Keywords:** ST elevation, j point depression, coronary angiogram.

## TAKO-TSUBO SYNDROME

**Joana Martins**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Tako-Tsubo syndrome, broken-heart syndrome or stress cardiomyopathy is a non-ischemic myocardial pathology which doesn't affect coronary arteries. It's a transitory condition, usually caused by emotional and physical stress or anxiety constant.

This syndrome translates into akinesia or dyskinesia of left ventricle with an anterior face's dilatation and the consequent increase of basal parts movement.

Heart-broken syndrome frequently mimics acute myocardial infarction due to the presence of chest pain, elevation of the ST segment on the ECG, and elevated levels of cardiac enzymes. Thus, some clinical manifestations are similar to those of coronary disease such as chest pain, dyspnea, syncope, arrhythmias, acute pulmonary edema and / or cardiogenic shock.

So, coronary angiography is a technique often used to distinguish these two pathologies.

**Keywords:** Tako-Tsubo syndrome, stress, coronary disease.

## HEART FAILURE SYNDROME

***Guilherme Flor***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Fisiologia Clínica, Coimbra, Portugal*

Heart Failure is the last phase of most heart diseases, which, together with the therapeutic progression in general and in the areas of HF itself, arterial hypertension and coronary artery disease in particular, and the increase in the average life expectancy, suggest that the prevalence of HF in the elderly continues to increase, taking as the main cause of hospitalization over 65 years in Portugal and beyond. However, this pathology encompasses not only a more senior population but also a younger population, the latter being less frequent. This is the case of the Portuguese singer, Salvador Sobral, who suffered from HF.

Knowledge of the disease itself and of its evolution allows to contribute to a better health care in medical establishments and beyond. A descriptive study was carried out, being used as a database of dissertation abstracts, scientific journals and reliable electronic sources.

HF is today considered one of the main causes of mortality and morbidity. It also has an incidence likely to increase. With this study, it is hoped to raise the knowledge of the disease itself as of its evolution, forms of prevention and treatment, for a better approach to it.

**Keywords:** Heart Failure; syndrome; congenital disease.

## RESPIRATORY FUNCTION TESTS

***Andreia Caramujo; António Caires; Inês Lopes; Maria Silva; Rita Dias***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Respiratory function tests are designed to determine the type and seriousness of pulmonary disorders; however, they don't allow you to define the specific cause of the illness. These types of tests are used to diagnose or monitor the development of some diseases, such as asthma, pulmonary fibrosis, chronic bronchitis, pulmonary emphysema, among others. They also play an important role in assessing the responses to certain treatments.

There are several types of functional respiratory tests and each one evaluates a different aspect of pulmonary function. An example of this evidence is the Spirometry-test that evaluates the dynamic lung volumes (such as the first second Expiratory Volume-or FEV, FEV1 forced Vital capacity FVC or CVF-and FEV1/FVC ratio) which is very useful as first-line test for screening respiratory diseases.

The main advantages of functional respiratory tests are their simplicity and their straightforward understanding and interpretation. Other positive aspects are because the exam is risk-free and without contra-indications, as that does not require the patient to be in a fasting state, the patient needn't stop habitual medication (only when you intend to evaluate the response to bronchodilators, and, if possible, these should not be used 6 to 12 hours before the exam). You must suspend the smoking habits, particularly if you're going to be assess the alveolocapillary diffusion capacity of the CO.

In conclusion, these tests allow you to measure the air holding capacity, inspiratory/expiratory capacity and exchange of oxygen/carbon dioxide, and can detect respiratory diseases and offer a detailed assessment of pulmonary function

**Keywords:** Spirometry-test; Vital capacity; respiratory diseases



## **ASTHMA MECHANISM**

***Alexandra Moreira; Beatriz Oliveira; Carolina Marques; Catarina Elias; Cristiana Geraldo; Eduarda Paulos.***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Asthma is a chronic inflammatory disease which is characterized by bronchial obstruction, associated to airway hyperresponsiveness.

There are two types of asthma: allergic (caused by exposure to an allergen) and nonallergic (caused by stress, exercise, illnesses like a cold or the flu, or exposure to extreme weather conditions, irritants in the air or some medications).

Bronchial inflammation is the major feature in asthma pathogenesis and results from complex interactions between inflammatory cells, structural bronchial cells, cytokines and inflammatory mediators. The genetic predisposition for the development of an immunoglobulin E (IgE-mediated response to common aeroallergens) is the strongest identifiable predisposing factor for developing asthma.

Allergic asthma depends on the plasma cells stimulation to secretion of IgE, which causes airways' inflammation. At first contact with the allergen, T-helper lymphocytes synthesize cytokines that promote B cells differentiation to plasma cells – IgE producers. The IgE will connect with mast cells and basophils. At second contact, the allergen connects with the IgE present on mast cells and basophils' membranes, through a reaction antigen-antibody, which results on degranulation and liberation of histamine, that causes bronchial constriction and respiratory mucosal inflammation, leading to edema. Simultaneous, there's activation of the macrophages of the airways and production of reactive species of O<sub>2</sub>.

Epithelial cells are damaged and create a denuded epithelial that contributes to the penetration of the allergen and his contact with specialized cells, dendritic cells.

This obstruction can be reversible, spontaneously or with treatment, such as the use of anti-inflammatory and bronchodilator drugs such as corticosteroids, modification of leukotrienes, long term beta agonist , theophylline and antihistamines.

**Keywords:** Bronchial inflammation; obstruction; allergic; nonallergic.

## **ERYTHROPOIETIN - PHYSIOLOGY AND PATHOPHYSIOLOGY OF ABUSE**

***Diana Campos, Francisco Anjos, Melani Bernardo, Rita Fernandes, Rita Sousa, Sara Santos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Erythropoietin is a hormone secreted mainly by the renal cortex and liver which belongs to a group of hematopoietic growth factors that regulate the proliferation and differentiation of hematopoietic cells of the bone marrow, precursors of blood cells (red blood cells, white blood cells and platelets). Erythropoietin has two main functions: promotes the development of red blood cells and initiates the synthesis of hemoglobin, the molecule that carries oxygen. Lower oxygen partial pressure (hypoxia), decreased of red blood cells due to hemorrhage, and increased tissue oxygen demand lead to erythropoietin secretion. Hypoxia is detected by an oxygen sensor in certain renal cells leading to the production of erythropoietin. As a result there is a stimulation of the synthesis and differentiation, at the bone marrow level, of eritroblasts. The erythroblasts reach maturation stage and enter the bloodstream in the form of erythrocytes, increasing the oxygen transport.

In high concentrations, erythropoietin can significantly increase the percentage of red blood cells, make blood thick and block blood vessels. Consequently, the possibility of clot formation increases. It can lead to heart attacks, strokes, seizures and strokes.

In clinical practice this hormone has been used to reduce the need for blood transfusion in surgical procedures, to increase hemoglobin levels and to treat anemia of various etiologies.

Erythropoietin has also been used by athletes, especially in endurance sports. Its use may lead to an artificial increase in performance because, by increasing the total mass of red blood cells, oxygenation of tissues increases.

**Keywords:** Erythropoietin, eritroblasts, oxygen, hemoglobin

## **AUTOIMMUNE DISEASES**

***Ana Beatriz Baptista, Carolina Costa, Gabriela Santiago, Gonçalo Neves, Joana Luís, Kate Sophia Spínola***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Autoimmune diseases occur when antibodies, produced to recognize and destroy invasive agentes, attack the body itself. Frequently affected organs and tissues include endocrine glands, blood components and connective tissue.

Autoimmune diseases can be grouped into two large categories: organ-specific autoimmune diseases (aimed at a single organ) and non-specific autoimmune diseases of organs (causing injuries in multiple organs or tissues). Symptoms change depending on the affected area and disorder. However, inflammation is a common symptom, regardless of the autoimmune disease. Treatment's main purpose is to decrease the production of lymphocytes, reducing the symptoms of the disease. However, in most cases these treatments provide a non-specific suppression of the immune system and therefore, it is not possible to distinguish the pathological autoimmune response from the protective, leading to a higher risk of the patient contracting infections.

Among the most frequent autoimmune diseases are rheumatoid arthritis and type I Diabetes Mellitus.

Rheumatoid arthritis is characterized by inflammation of the joints. It can lead to the destruction of the joint and peri-articular tissue because joint inflammation is triggered by the presence of cytokines that interact with white blood cells, causing a local and systemic inflammatory response. It translates into edema, pain and redness, increasing the temperature of the affected joints and disabling the movements.

Type 1 Diabetes Mellitus is known by the inability of our body to produce insulin due to the autoimmune destruction of pancreatic B cells, resulting in the inability to absorb glucose and excessive excretion of this substance in the urine.

**Keywords:** Autoimmune diseases, antibodies, infections

## HEMOPHILIA

***António Souto; Camila Alves; Daniela Galvão; Inês Espadinha; Mariana Antunes; Rita Pinto.***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Hemophilia is a rare genetic disorder in which your blood doesn't clot normally because it lacks sufficient blood-clotting proteins (factors). If you have hemophilia, you may bleed for a longer time after an injury than you would normally, but not faster.

Small cuts are usually not the problem. The greater health concern is deep bleeding, especially in your knees, ankles and elbows. That internal bleeding can damage your organs and tissues, and may be life-threatening.

Hemophilia is an inherited X-linked recessive disease. It's more common in men, because it only takes one chromosome carrying the gene for the disease to appear. However it takes two chromosomes carrying the gene for women to inherit the disease.

There are two types of hemophilia: hemophilia A (classic hemophilia), the most common, caused by missing or defective factor VIII; hemophilia B (Christmas disease) caused by missing or defective factor IX. Despite being a genetic disease, about 1/3 of cases are caused by a spontaneous mutation.

For people with a family history of hemophilia, it's possible to determine during pregnancy if the fetus is affected by hemophilia. Severe cases of hemophilia usually are diagnosed within the first year of life and a blood test can reveal a clotting-factor deficiency. Depending on the severity of the deficiency, hemophilia symptoms can first arise at various ages.

This disease is treated by receiving replacement of the specific clotting factor that you need, through a tube placed in a vein, so the blood stream has sufficient amount of coagulation factors to prevent the bleeding.

**Keywords:** hemophilia; coagulation; genetic

## DIABETIC NEPHROPATHY AND DIABETIC FOOT

***Daniel Bogalho, Dora Simões, Francisco Pacheco, Helena Videira, Pedro Francisco;***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Diabetes mellitus is a chronic metabolic disease, characterized by an increase of blood glucose. It occurs due to disorders in the secretion or action of insulin. The excess of glucose in the blood becomes toxic to our body, affecting myelin sheaths, nerves, endothelial cells from vessels, among others.

The damage of the podocytes and endothelial cells, which are fundamental elements of the filtration barrier, and a high arterial pressure, cause lesions in the kidneys. Diabetic Nephropathy arises as a result of these lesions. Initially, this kidney disease is asymptomatic or causes minimal urinary manifestations. With its evolution, there are alterations in the histology of the kidney and glomerular filtration, with consequent loss of proteins in the urine. The progressive increase in the amount of albumin and proteins excreted in the urine follows several other characteristic symptoms of this condition, such as edema in the extremities, nausea, and tiredness. In its most advanced form, it can progress to a condition of chronic renal failure, which requires replacement of renal function, by dialysis or transplantation.

With the hardening of the walls of the vessels and their occlusion as a consequence of atherosclerosis, a reduction of the blood flow in the lower limbs is seen, which can cause ischemia and, consequently, wounds. This leads to diabetic foot disease. In individuals with diabetes, as angiogenesis and tissue healing are less effective, wounds develop into ulcers, more amenable to infection. In extreme cases, amputation is inevitable.

**Keywords:** Diabetes mellitus; Diabetic Foot; Diabetic Nephropathy

## **CUSHING DISEASE**

***Beatriz Alberto; Beatriz Teles; Leandro Santos; Mariana Lourenço; Patrícia Mendes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Cushing disease is a rare disorder characterized by increased adrenocorticotrophic hormone (ACTH) production from the anterior pituitary, leading to excess cortisol release from the adrenal glands. There is a daily fluctuation in the levels of cortisol, called its circadian rhythm. Cortisol should be low at night while we sleep and it rapidly rises in the early morning, helping us have the energy to start our day. Cortisol is a wake-promoting hormone, so it can contribute to insomnia when it is high. Your body may produce high levels of cortisol for a variety of reasons, including: high stress levels, surgery, injury, or pregnancy.

The most common cause of Cushing syndrome is the use of corticosteroid medications in high doses for a long period. Other causes include a pituitary gland tumor.

Cortisol can help maintaining blood pressure and heart function, controlling the immune system, converting fat, protein, and carbohydrates into energy. However, too much cortisol can lead to a fatty hump between the shoulders, pink or purple stretch marks on the skin, high blood pressure and, on occasion, type 2 diabetes.

Cushing's Syndrome treatment should be guided by the endocrinologist and varies depending on the cause of the syndrome. When the disease is caused by long-term use of corticosteroids, a reduction in the dose of the medicinal product is indicated according to the physician's advice.

When Cushing's syndrome is caused by a tumor, the treatment usually includes surgery to remove the tumor and then to perform radiotherapy or chemotherapy.

**Keywords:** cortisol; circadian rhythm; Cushing syndrome

## WHITE VS BROWN ADIPOSE TISSUE: ADIPOKINES

***Carla Lopes, Carla Masculino, Gabriela Souza, Rafaela Fernandes, Rodrigo Fernandes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

The adipose tissue is an organ that performs many endocrine functions, composed of white and brown fat.

White adipose tissue (WAT) known as visceral adipose tissue, is responsible for the secretion of adipokines. These adipokines function as classic circulating hormones to communicate with other organs (brain, liver, muscle, the immune system, and adipose tissue). The dysregulation of adipokines has been implicated in obesity, type 2 diabetes, and cardiovascular disease. Although leptin and adiponectin regulate feeding behavior and energy expenditure, these adipokines are also involved in the regulation of inflammatory responses and increasing body's sensitivity to insulin.

The formation of brown adipose tissue (BAT) is induced by cold, adrenaline, PGC-1 $\alpha$  or melatonin.

With the activation of lipase, occurs the hydrolysis of triglycerides, and release of fatty acids and glycerol. The metabolism is faster, increasing oxygen consumption and heat production, raising the temperature in the tissue and warming the rest of the body. This process allows a greater ability to dissipate energy, increasing metabolism and energy expenditure. Given this capacity of BAT, increasing his amount and function (with new drugs or therapies), could be the answer to combat obesity and prevent type 2 diabetes and other associated vascular and metabolic disorders.

Although it is not possible to transform a WAT cell into a BAT cell, it is possible to transdifferentiate white adipocytes into an intermediate phenotype, which gives rise to BRITE CELLS (Brown + White). These cells have characteristics of both adipocytes.

Browning is an important factor fighting against metabolic diseases.

**Keywords:** adipose tissue, adipokines, obesity

## THE ART OF PLATING: DOES ATTRACTIVENESS COUNT?

***Cátia Pereira, Eduarda Carreira, Joana Cunha, Mara Coelho, Mónica Lopes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

People enjoy food in a multisensory way. From the early days, visual factors, such as colors and textures, influenced the interpretation of our taste and acceptance of the dishes. This influence has increased substantially and primarily through social communication and in association with other factors are at the root of this growth, as they are one of the means to share elaborate and appetizing dishes. However, this is not the only factor to be combined with the art of plating because we know that consumption can be influenced by the size of the dish itself and the way the plate is presented.

The aim of this work is to evaluate the visual effects of plating on the palate that will influence us in the consumption of food.

A research was made in several databases such as PubMed, Science-direct, B-on using the terms "Plating", "Flavor", "Portions", "Visual appearance" between the years of 2010 and 2017.

The results show that the presentation of plating has an impact on the visual combination and taste of food in several areas. Effectively, a larger dish leads to an increase of consumption. Likewise, if we take in consideration the way we put food in a plate, we will see that people will think that a dish with an attractive framework of textures and colors has a better taste and they might even be open to pay a little more. Such wouldn't happen if the plate was organized in an ordinary way.

We realized that nowadays there are a lot of influences regarding each meal we take. Social media might has its influence but attractiveness has a much bigger power in the food we choose to eat. For that reason, it's said that the first taste is always with the eyes.

**Keywords:** attractiveness, plating, colors and textures, taste



## **AROMATIC HERBS: HIDDEN BENEFITS**

***Ana Tavares, Beatriz Norte, João Lé, Nádía Martins***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Background:** Nowadays, the use of aromatic herbs is increasing at a high pace in Europe, which can be explained due to the growing preoccupation of Europeans with their health and well-being. The aromatic herbs are plants usually of small dimensions that present several proprieties and uses in the Portuguese cuisine. They are often characterized by their specific smell which provides a different aroma to the dishes, enhancing their flavour and colour.

**Aim:** This study intends to specify the several benefits of the use of aromatic herbs in the confection of daily meals.

**Materials and Methods:** It was conducted a review process, recurring to scientific databases using the terms: “aromatic herbs”, “bioactive compounds”, “benefits”, “confection” and “nutrition values”. And then, selected the most relevant articles found.

**Results:** Aromatic herbs are mainly constituted by proteins, fibre, sugars, essential oils, and minerals. Besides those components they also have high concentrations of bioactive compounds such as phenolic acids, flavonoids, sterols and cumarins. Another benefit of the utilization of these herbs is the reduction of the amount of salt added to the dishes.

**Discussion:** However when we focus on the proprieties of the aromatic herbs the literature showed that they are influenced by many aspects, such as: physical processes (chopping, drying or grinding) and also by the cuisine technics associated to their confection.

**Conclusion:** The use of aromatic herbs can have a strongly positive influence on the reduction of salt consumption in our diet and also add beneficial properties to it.

**Keywords:** Aromatic herbs, bioactive compounds, benefits, confection and nutrition values.

## **PULSES – THE RELATION BETWEEN ANTINUTRIENTS AND CULINARY TECHNIQUES**

***Andreia Nascimento; Bárbara Alexandre; Mafalda Eulálio; Maria João Rosa; Mariana Pinto.***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Due to the value of pulses in our diet, is important to know the beneficial and harmful effects they may have on health. Some compounds present in them have an antinutritional behavior, decreasing the digestibility of nutrients, their absorption and even produce severe intoxications. Examples of antinutrients are phytates, nitrates, oxalates, tannins, lectins and saponins.

Aim: We intend to review the available knowledge about the different antinutrients present in pulses, the effects they can cause and ways to eliminate or inhibit them.

Methods: A review of the literature was conducted on this topic using research databases.

Results: In an attempt to increase the utilization of pulses, their benefits and reduce the antinutrients, there's a wide range of processing techniques, such as immersion, boiling, autoclaving, radiation, cooking, roasting, germination, fermentation, supplementation with chemicals and enzymes and extrusion.

One of the most common techniques to the population is soak the pulses. Most of the antinutrients in these foods are found in the rind and since they are soluble in water, they simply dissolve when they become soggy. This will reduce the rate of such compounds by 20%, and if we leave them overnight, this amount is reduced by 90%.

Conclusion: The estimated daily consumption of pulses in Portugal was 0,6% of the total intake, well below the recommended 4%. Against this value, there is an urgent need to strengthen the use of this food group, in particular by promoting innovative ways of consuming and enhancing its nutritional and organoleptic qualities.

**Keywords:** pulses; antinutrient; cooking; availability.

## INFLUENCE OF MARINADES IN HETEROCYCLIC AROMATIC AMINES

**Ana Monteiro, Andreia Vieira, Francisca Magalhães, Maria Damas**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** Food preparation aims to improve its microbiological, digestibility and sensory properties. However, it can also lead to the production of toxic substances. Heterocyclic aromatic amines (HAAs) are unwanted substances produced during exposure to foods at high temperatures, so they must be metabolically activated before they become carcinogenic.

**Aim:** The aim of our study is to evaluate the impact of some factors on the formation of HAAs, as well as identify and classify culinary practices that minimize its formation but maintain the good taste and pleasant aspect of the food, highlighting the marinades.

**Methods:** The literature review was conducted through research databases "PubMed", "Scielo" and "Google Scholar" using the terms "marinades" OR "antioxidants" AND "heterocyclic aromatic amines" AND "carcinogenesis". More relevant articles were selected considering the title and abstract and further on analysed.

**Results:** There was a marked influence on the temperature, but also on confection time. Cooking methods using indirect convection for food heating produce lower levels of HAAs compared to direct contact. The concentration of HAAs differs with the food's nutritional composition. With the protein content increases, however with the water percentage and antioxidant properties decreases, as far as the fat content is lacking consensus. Marinades consists on forming a solution composed of a fat, aromatic elements, and acid substances that once present can inhibit the formation of HAAs.

**Conclusion:** Different foods, subjected to the same processing conditions, may present different levels of HAAs. The previous preparation with marinades rich in antioxidants demonstrates drastic reductions in HAA levels.

**Keywords:** "marinades" ; "antioxidants" ; "heterocyclic aromatic amines" ; "carcinogenesis"

## **FISH AND CULINARY METHODS: EFFECT ON THE LIPIDIC PROFILE**

***Ana Carolina Morgado, Filipa Costa, Marta Martins, Sandra Fernandes, Tatiana Almeida***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Background:** Fish is one of the most complete food which provides a great quantity and quality of nutrients. Fish fat is characterized by its high content of polyunsaturated fatty acids (PUFA), however, the PUFA content in raw fish tissue can not provide explicit information about the nutritional value after cooking. The objective of this work was to identify the changes in the fish lipidic profile when subject to different culinary methods.

**Methods:** We did a research through some databases such as “Scielo”, “Pubmed”, “Google Scholar” using some keywords and selected the articles with the most relevant information.

**Results:** The various culinary methods cause chemical and physical reactions in the fish, causing changes in their nutritional composition. These alterations were different in several species of fish when submitted to the same method of cooking. In the case of the fatty acids content they are susceptible to oxidation when subjected to high temperatures, which makes the confection techniques affect the fish lipidic profile when they are compared with the raw fish. For example, confection of foods in the microwave is associated with a greater retention of nutrients, especially lipids, due to the loss of water.

**Discussion/Conclusion:** Through the different articles analysis, we conclude that different types of fish undergo different changes when submitted to the same method of confection and that the same fish when submitted to different methods, their composition at lipid level also undergoes changes. Thus, it is essential to know the different types of fish and the changes that occur according to the process to which they are submitted in order to get the best of them.

**Keywords:** “fish”, “fatty acids”, “culinary methods”, “nutrients”

## THE IMPACT OF COOKING METHODS ON THE NUTRITIONAL QUALITY OF VEGETABLES

***Catarina Maurício; Eduarda Costa; Helena Teixeira; Raquel Luís; Vera Gonçalves***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** The daily consumption of vegetables is advised by various global organizations due to their important role in our diet since they have vitamins, minerals and fiber. These are indispensable for a good performance of the different body functions. A large part of these nutrients are consumed after cooking, and the use of cooking methods cause alterations at several levels, leading to nutritional and sensory changes.

**Objective:** Understand the impact that cooking methods have on nutritional quality of vegetables.

**Methods:** In this review work, were consulted different databases like PubMed and Web of Science, using some keywords and selecting only those articles with relevant information.

**Results:** We analyzed five different cooking methods commonly used that are: boiling, steam, grill, roast and stew. The cooking processes more referenced were the "boiling" and "steam" methods. The methods as "grill", "roast" and "stew" were the least studied.

**Conclusion:** Steaming compared to boiling, is better because in the second occurs high losses of some compounds. As regards the "grill" method, it is important to note that this method can lead to the formation of toxic substances. On the "stew" and "roast" methods, there have been few studies available, which makes it difficult to get a conclusive analysis about the real effect of these processes in vegetables.

**Keywords:** Cooking methods, vegetables, nutritional value

## **MEAT: COOKING AT LOW TEMPERATURES AND SENSORY CHARACTERISTICS**

***Ana Jorge, Marisa Pereira, Marta Figueira, Rita Fernandes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: Meat is the protein source par excellence and might be cooked in several different ways. Cooking meat at low temperatures is one of healthiest ways of doing it, which includes sous-vide and the combi steamer. Thus, the purpose of this paper is to understand how these culinary methods influence the sensory characteristics of meat in terms of colour, flavour, texture and nutritional value.

Methods: This literary review was based on the analysis of scientific articles from databases like "Science Direct" and "Google scholar" using key words such as "cooking at low temperatures", "meat" and "sensory characteristics"

Results: Compared with traditional culinary methods (high temperatures), meat cooked at low temperatures presents a softer texture, since there is less contraction of muscle fibers. This results in a lower amount of juices released from the meat and thus, greater juiciness and less loss of volume. In terms of colour and flavour they are usually intensified, since nutritional losses are insignificant. There is also an inhibition of microorganism's growth in the case of sous-vide, since is a vacuum technique that works without oxygen, which is essential for it.

Discussion/conclusion: Based on the analysis of the results, it is concluded that cooking meat at low temperatures offers benefits both at nutritional level and in the maximization of the potential of the food. Among the different techniques, sous-vide is the most advantageous one. Finally, is important to note that the culinary methods that resort to low temperatures require a longer time to cook.

**Keywords:** meat, cooking at low temperatures, sous-vide, tenderness, juiciness

## DIFFERENT METHODS TO ESTIMATE FOOD PORTIONS.

**Ana Beatriz Rodrigues, Inês Santos, Lara Faria, Marisa Rodrigues, Teresa Ferreira**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Background:** Nowadays, the accurate estimation of food portion size is critical in dietary studies because of the quantitative underrate of food consumption. The increase in portion sizes and rate of obesity suggests a causal relationship between food portions available and energy intake due to false portion-size reporting. The main aim is to estimate the correct portions that guarantee individual health.

**Methods:** This literacy review research has been oriented through databases like “PubMed”, “Scielo”, “Google Scholar”, using keywords like “portion”, “food”, “estimation”, “dietary measures”, “household measures” and “diet”.

**Results:** The portion-size estimation of the wheel groups, depends on several factors such as gender, age, weight, height of the individuals or the characteristics of each food item (shape or maturity). To estimate portions sizes, we can use volumetric cups, spoons or hands to describe the size of the portion. For example, ‘a fist’, ‘thumb tips’ and ‘finger tips’ are used to estimate one cup, one tablespoon and one teaspoon, respectively. Food is frequently consumed away from home without access to scales or other portion size estimation aids. This fact created a need for an easy and effective method to estimate portion size.

**Discussion/Conclusion:** The validation of measurement aids is important and can be useful in improving the analyses of dietary data. Errors in portion-size estimation have an effect on underreporting for many food groups. This is particularly important because hand sizes vary considerably amongst individuals. For example, all hand measures were significantly smaller for females than males. In Europe, the portion sizes of processed foods have doubled in food supply along, with the increased of obesity, type 2 diabetes mellitus or cardiovascular diseases, leading to a decrease in overall health.

**Keywords:** Portion, Methods, Food, Estimation

## **PULSES: PREPARATION/COOKING AND NUTRITIONAL BIOAVAILABILITY**

***Catarina Camacho; Denira Nunes; Diane Reis; Sofia Miranda***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: Pulses are grains contained in pods rich in fibrous tissue. They have cellulose casing, and contains starch, proteins, minerals, vitamins, also have a very low amount of fat. The consumption of pulses requires pre-treatment, it confers not only nutritional benefits, but may also cause changes in the contents and physical and chemical properties of the nutrients. The aim of this work was to realize that changes occur in the nutritional bioavailability of pulses, due to the methods used for preparation and cooking them. As well as, we identify in which methods these changes are most likely to occur.

Methods: We conducted a series of research in several databases, such as "Google Scholar", "PubMed" and "Science Direct". For this, we use keywords and according to the intended, selected articles with greater relevance.

Results: Pulses have substances that can alter the normal nutrient digestion. In this way, the pre-treatment (rehydration and thermal process) of the pulses become essential to eliminate such substances, and thus increase its nutritional quality, digestibility, and organoleptic characteristics. However, the reduction of some essential micronutrients is also identified, due to the processing, namely hydrothermal treatment, which in the case of beans, for example, suffers a decrease in the vitamin E content, depending on the period of this process.

Discussion/Conclusion: Based on the various articles analyzed. We can conclude that due to the processing, there is an alteration of both macro and micronutrients present in pulses, notably an increase in the percentage of proteins and lipids, due to leaching of soluble solid compounds; A decrease in starch content. It is also noted that the thermal processing time factor appears to be decisive for the reduction of Tocopherols content.

**Keywords:** Pulses; Preparation; Cooking methods; Nutritional quality; thermal processing.



## OLIVE OIL IN FOOD COOKING AND SEASONING

***Beatriz Santos, Carlota Gonçalves, Karin Varela, Sara Beato***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Background:** In Mediterranean countries, olive oil, along with fruit, vegetables and fish, is a key component of diet in this region, being considered important for the preservation of health of the population. The maintenance of its quality and health attributes after thermal processing is frequently questioned. The aim of this review is to understand why olive oil properties make it so interesting at nutritional level for food confection and seasoning.

**Methods:** This literary review has been oriented research databases like “PubMed”, “Scielo”, “ELSEVIER”, “Google Shoolar” and also using keywords like “olive oil”, “nutritional composition”, “confection method” and “seasonings”.

**Results:** In order to understand olive oil behavior under thermal processing conditions, it is fundamental to address some considerations into its chemical composition. Olive oil is among the vegetable oils with higher monounsaturated fatty acids in its composition. Compositional changes in the olive oil after thermal processing are expected. The most common degradations include triacylglycerols hydrolysis and polymerization, fatty acid oxidation among others. Olive oil degradation under thermal processing is a complex issue from the chemistry point of view, due to the huge amount of different compounds in its composition, as well as from the potential health effects perspective, derived from the reactions and interactions taking place under thermal stress.

**Discussion/Conclusion:** Based on the results achieved for olive oil cooking under different processing conditions, we can conclude that, in comparison with other vegetable oils, it has a good thermal resistance in general. In conclusion, we believe that olive oil is the by far the best fat for confection and seasoning of food, always preferring the use of crude olive oil.

**Keywords:** olive oil; nutritional composition; confection method; seasonings; thermal resistance

## **ROTAVIRUS**

***Catarina Maurício, Eduarda Costa, Helena Teixeira, Raquel Luís, Vera Çonçalves***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

The name rotavirus is derived from the Latin word *rota*, meaning "wheel". Rotaviruses are nonenveloped, double-shelled viruses. The genome is composed of 11 segments of double-stranded RNA, which code for six structural and five nonstructural proteins.

Rotavirus disease is characterized by vomiting and watery diarrhea for 3 to 8 days. Fever and abdominal pain also frequently occur. Additional symptoms include loss of appetite and dehydration. Symptoms of dehydration include decrease in urination, dry mouth and throat and feeling dizzy when standing up. For people with healthy immune systems, rotavirus disease is self-limited, lasting for only a few days. Treatment is nonspecific and consists primarily of oral rehydration therapy to prevent dehydration.

The virus spreads easily among infants and young children. Individuals can spread the virus both before and after they become sick with diarrhea. They can also pass rotavirus to family members and other people with whom they have close contact. It spreads by the oral-fecal route; this means the virus is shed by an infected person and then enters a susceptible person's mouth to cause infection and can be spread by contaminated hands, objects, food and water.

The main goal of this work is to study and understand how the rotavirus spreads, why it has seasons where it becomes more active and how to prevent the virus disease.

**Keywords:** Rotavirus, symptoms, disease, prevention, contamination

## **SALMONELLA: THE FIVE INFECTIOUS MICROMETERS YOU CAN FIND IN FOOD**

***Beatriz Norte, Nádia Martins, Eduarda Carreira, Mónica Lopes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

*Salmonella* is a bacterium that is gram-negative, facultative anaerobic, rod-shaped bacteria with respiratory and fermentative metabolism. This bacterium is completely involved in the development of Foodborne Diseases. Also, it uses people and animals as natural reservoir. The disease caused by *Salmonella* have increased, in nowadays affects about 1.2 million people per year.

*Salmonella* infects mostly children. The most frequent symptomatology consists in high fever, diarrhea, vomiting and abdominal cramps that usually develop between 12 to 72 hours after ingestion. In some advanced cases, these symptoms can lead to several complications. *Salmonella* can be transmitted by foods, such as eggs, poultry, meat (bovine or porcine) and milk. Treatment could consist in two levels: pharmacological level, prescribing antibacterials, and nutritional level, drinking water as a way to combat the dehydration state. In regard of prevention, it goes through vaccination in groups of risk, health education projects, frequent and systematic supervision in production and distribution of food.

Despite of the knowledge that already exists about this bacterium and the technological advances until now, there is still a long way to go to eradicate *Salmonella*, once Foodborne Diseases incidence caused by this bacterium has been dramatically increase.

Aim: Promotion of a brief characterization of *Salmonella*, as to its symptomatology, complications, transmission, treatment and prevention.

**Keywords:** Bacterium, food, Foodborne Diseases, microorganism, *Salmonella*

## ***YERSINIA ENTEROCOLÍTICA***

***Ana Monteiro, Andreia Vieira, Francisca Magalhães, Maria Damas***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

*Yersinia enterocolitica* is a zoonotic agent that belongs to the Enterobacteriaceae family. This bacterium is a small Gram-negative bacillus that resists freezing. However, it is sensitive to heat, being destroyed by pasteurization. After contact with human culture, it causes an infection in the gastrointestinal tract leading to the appearance of internal symptoms. The incubation period occurs between 24-48 hours after its ingestion, and it can reach to 11 days. Ingestion of contaminated food and water, especially unpasteurized milk and meat, acts as a vehicle for the transmission of most infections caused by *Yersinia enterocolitica*. However, others may be carriers of early sterilization precautions. Diagnosis of the presence of *Yersinia enterocolitica* is obtained by the isolation of the microorganism in culture of samples of feces, blood and vomit. In many cases, the treatment is an hydration action of the patient, in the most severe cases it is necessary to use antibiotics. The prevention is to try not to consume foods of dubious origin. In this way, it is fundamental to carry out a research of the outbreak and identify sources of transmission for control and prevention. Precautions should also be taken with regard to patients in hospitals and children in day-care centers.

This work has the aim to know the greater potential of development of *Yersinia enterocolitica*. It is also intended to understand how this bacterium acts in our body and how we can predict this.

**Keywords:** *Yersinia enterocolitica*, food poisoning, food infection, Enterobacteriaceae.

## **STAPHYLOCOCCUS AUREUS**

***Tatiana Almeida, Sandra Fernandes, Filipa Costa, Tânia Lopes, Marta Martins***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Bacteria that belong to the genus *Staphylococcus* have a spherical shape and can be composed in clusters and chains. This group of bacteria are part of the natural flora of the skin and mucous membranes in humans, having very specific niches according to the species in question. However, in some situations, staphylococci may become pathogens and are therefore called opportunistic microorganisms, which may cause moderately severe or even lethal infections.

Among all species of the genus *Staphylococcus*, *S. aureus* was the first species to be recognized as a human pathogen, being associated with a high mortality rate and morbidity. *S. aureus* can cause disease through the production of toxins, such as food poisoning (or staphylococcal gastroenteritis), toxic shock syndrome and scalded skin syndrome; or through the proliferation of abscesses and tissue destruction, as is the case of skin and soft tissue infections. The food poisonings that occur are due to the consumption of contaminated foods such as meat, eggs, pastry cakes, among others.

The treatment for *Staphylococcus* goes through the use of antibiotics when the pathogenesis is caused by the bacteria, however in the case of being caused by the toxin the treatment requires only hydration and rest.

The objective of this work was to address a bacterium that can contaminate food - *Staphylococcus* - and in turn lead to pathologies such as food poisoning.

**Keywords:** *Staphylococcus*, *S. aureus*, diet, microbiology, foods

## FOOD POISONING CAUSED BY *BACILLUS CEREUS*

**Beatriz Santos, Carlota Gonçalves, Sara beato**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

*Bacillus cereus* is a gram positive, facultative aerobic bacterium belonging to the phylum group Firmicutes. It has the shape of a large rod about 1.0 to 1.2 µm wide and 3.0 to 5.0 µm long and exhibits motility. It is responsible for numerous food diseases, in the form of spores, this organism can be found in the soil. *Bacillus cereus* spores are resistant to extreme environmental conditions, such as heat treatment and dehydration. The thermoresistance of the spores may vary according to the strain. When the condition is favorable the spores can germinate and multiply in processed foods.

It can cause two types of food diseases: the emetic syndrome caused by the emetic toxin and the diarrheal syndrome caused by diarrheal toxin. The main symptoms are, respectively, nausea and vomiting and acute diarrhea after incubation period.

To avoid this intoxication, we shouldn't consume foods that were left at room temperature more than two hours, do not eat leftovers and reheat well (above 75°C) the food before serving.

The treatment of this type of food poisoning is symptomatic, this means that it only to relieve the symptoms. Good hydration is required too.

The aim of this review is to recognise that it is necessary to take into account the implementation of appropriate hygiene practices in order to prevent the appearance of food poisoning by this bacterium, safeguarding public health.

**Keywords:** *Bacillus cereus*; spores; thermoresistance; food poisoning

## FOODBORN BOTULISM

***Cátia Pereira, Joana Cunha, Mafalda Eulálio, Mara Coelho***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Foodborn botulism is a severe paralytic disease that occurs after ingestion of preformed toxins produced by the *Clostridium botulinum*, anaerobic, gram-positive, subterminal spore-forming bacteria. In our country, the disease is rare or underreported, due to the difficulty of diagnosis, inadequate information systems and lack of reference centers for the epidemiological investigation of outbreaks of the disease.

Botulism can be acquired after ingestion of various kinds of foods, has acute character, and provokes gastrointestinal and neurologic symptoms. The foods that cause the symptoms above mentioned are canned food, meat sausages, some vegetables and seafood. Proliferation can be inhibited by refrigeration, freezing, pH decrease or by use of preservatives or hypertonic substances such as the use of large amounts of salt or sugar. There are several ways to treat this disease but the specific one is the use of antitoxin serum. If not treated early it can cause paralysis in the arms, legs, respiratory muscles and it can occur death.

The bacteria that causes botulism shouldn't be associated only with ingestion of prepared foods at home, but also in restaurants and industrialized aliments. Therefore, the botulism transmitted by contaminated foods is of inestimable relevance for the control of the world public health, and preventive measures are essential to alleviate the incidence of cases for this disease.

The aim of this work is to know and evaluate the impact of *Clostridium botulinum* in the human organism through feeding.

**Keywords:** *Clostridium botulinum*, food, Foodborn botulism.

## TAPEWORM AND FOOD INGESTION

**Ana Beatriz Rodrigues, Inês Santos, Marisa Rodrigues, Teresa Ferreira**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Cestoda is a class of parasitic worms of the flatworm phylum. They are required intracellular parasites and need to anchor in the intestinal wall of the host and absorb the nutrients resulting from the digestion of him, so they can grow. The best-known species are commonly called tapeworms, such as *Taenia saginata*, which reside in the jejunum of human being, causing infections.

Adult worms vary in size from 4 to 12 m. Their body is composed by successive segments, named proglottids, continually produced by the neck region of the scolex (worm's head), as long as it is attached and alive. Mature proglottids are essentially bags of eggs, each of which is infective to the proper intermediate host. It can leave him by feces or migrate as independent motile proglottids.

The *Taenia saginata* causes in cattle *Cysticercus bovis*, which is a parasite, by grazing in fields upon which human excrement has been deposited either through fertilization with “night soil” or from poor sanitation or pastures flooded by rivers and creeks. It can be transmitted directly from the *T. solium* eggs, indirectly through the ingestion of food (undercooked, raw beef or vegetables) or by contaminated water with *Taenia solium* eggs.

Most infections are asymptomatic. The host only become aware when a proglottid segment is noticed in feces or felt as it passes through the anus. Gastrointestinal symptoms may include loss of appetite, nausea or vague abdominal pain.

The treatment including a single dose of albendazole or praziquantel have been used successfully.

The main aim is to report food as a vector of tapeworms infection, and how to control it.

**Keywords:** Tapeworms, Infection, Food, Parasite



## MICROORGANISMS ROLE IN THE PRODUCTION OF KEFIR, SKYR AND QUARK

**Ana Tavares, Catarina Camacho, Denira Nunes, Diane Reis**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Nowadays, the dairy industry has been evolving more and more, seeking not only to increase the range of products available to the consumer, but also to satisfy its new requirements. For this reason, appeared recently on the market, dairy products such as, kefir, skyr and quark. All of these are fermented products, rich in protein and with a specific bacterial flora. When referring to the skyr production we verified that the species of bacteria involved are *Streptococcus thermophilus* and *Lactobacillus bulgaricus*, responsible for the lactic fermentation of the low-fat milk used to obtain this dairy. This two species are eacters of coccus or rods Gram-positive, catalase negative, non-sporulating, which produce lactic acid as the major end product. Due to their symbiotic relationship the fermentation time when they are both present decreases. It is also known that the coexistence of these microorganisms increases the production of exopolysaccharides (EPS), casein and whey protein.

However, the bacterial flora founded in each dairy product analysed, influences not only, the consistence, the texture or flavour of the product, but also the type of intestinal response to their ingestion.

Even though, most of this fermented dairy product are produced similarly, the microorganisms involved on the lactic fermentation are different and this affects not only, the nutritional composition of the product, but also their benefits for the human organism.

This study intends to specify which microorganisms are involved in the production of the newest fermented milk products availed on the market and their benefits on our metabolism.

**Keywords:** Fermented foods, yogurt, skyr, bacteria and *Lactobacillus*.

## **FOOD AGE'S. GLYCEMIC INDEX**

***Joanna Nunes, João Cardoso, Margarida Tomé, Francisca Teixeira, Sara Resende***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Glycemic index (GI) measures the blood sugar levels, considering the quantity and quality of carbohydrates consumed. It is influenced by the number of fibers, sugars and lipids, food preparation and food's maturation stages.

The formation rate of AGEs in food depends on several factors, such as processing time and temperature, water availability and pH. The quantity of AGEs in the plasma and tissues is lower than the amount consumed in a conventional western diet (rich in thermally processed foods and sources of simple carbohydrates), which led to the hypothesis of dietary AGEs as risk factors for human health, so-called "glycotoxins".

AGEs can cause damage to the metabolism through two basic mechanisms. The first one is the modification of the native structure of biomolecules, notably the conformational change of intracellular and extracellular proteins; and the second via is the interaction of these products with AGEs-sensitive receptors present in some cells, such as endothelial cells, monocytes and macrophages inducing oxidative stress, inflammatory cytokines production and inflammation factors growth, thus contributing to the progression of various pathologies, such as atherosclerosis, irrespective of diabetes mellitus or renal disease.

Generally, foods with lower GI and higher nutritional density should be recommended as most suitable choices. A high GI diet and low fiber intake increase glycemia and insulinemia, raising the rate of glycation.

**Keywords:** Food AGE's, Glycemic index, Glycotoxins

## **BARIATRIC SURGERY AND SATIETY MECHANISMS**

***Catarina Grumete, Diogo Martinho, Filipa Santos, Joana Fernandes, Joana Abreu, Joana Mesquita, Pamela Vazquez***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Satiety is an important mechanism whose function is to inhibit the ingestion of food and beverage, linked to a variety of hormones released after every meal.

Insulin is produced in the pancreas, being responsible for the inhibition of the appetite.

Leptin is released by adipose tissue, suppressing the ingestion of food by the signalization of the amount of body fat.

Besides these, some hormones are released from the intestine such as: Cholecystokinin (CCK) when food passes from the stomach to the intestine in response to protein and fat present in food, Peptide YY participates in the decrease of food intake, GLP-1 stimulates biosynthesis and release of insulin, reducing gastric emptying and the secretion of hydrochloric acid and secretin which helps to neutralize gastric acid.

In opposition, there is Ghrelin named as “the hunger hormone”, that stimulates the appetite, perceived by the stomach contraction.

Despite these mechanisms of control, there are many studies that associate obesity to a high energy intake and sedentary lifestyle.

Various methods are used to prevent and treat this pathology, one of these is the bariatric surgery, an invasive protocol that modifies gastrointestinal tract and affects the normal course of actions during digestion, decreasing the capacity of the stomach. Because it gets full quickly, the effect of Ghrelin is controlled and the hormones that restrict the appetite are released inducing a sensation of postprandial satiety.

Concluding, this epidemic is treatable, but it should be prevented with a healthy lifestyle.

**Keywords:** Satiety, Hormones, Bariatric Surgery

## VITAMIN K, ANTICOAGULANTS AND ANTIPLATELET AGENTS

**Ana Margarida Dias, Ana Rita Silva, Inês Bravo, Joana Carvalho, Sara Coelho**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Homeostasis is the tendency of the body to the existing balance through some regulatory mechanisms. Thus, in the case of a bleeding, homeostasis is achieved via the platelet aggregation and clotting.

Platelet aggregation begins with endothelial injury and results in the agglomeration of platelets to the surrounding tissue due to exposure of collagen matrix and subendothelial proteins. This fragile platelet thrombus can stop the bleeding, but still can unjoin. Due to this fragility is important the formation of fibrin filaments through the coagulation cascade.

On the contrary of anticoagulants and antiplatelet agents, vitamin K, liposoluble protein, promotes the coagulation, since it's fundamental in the formation of proteins that participate in blood coagulation. It's deficiency is a result of extremely inadequate ingestion, bad fat absorption or the use of anticoagulants, harming the coagulation. Summing up, the deficiency of vitamin K decreases the prothrombin levels and other coagulation factors depending on it, causing a defective coagulation, and potentially, the hemorrhage.

The formation of the clot in place of endothelial injury is important for maintaining vascular integrity. The mechanisms involved in this process, they argued to the excessive loss of blood. However, they can block blood flow and cause serious problems.

To avoid the blocking, there are antiplatelet agents, which are medicines that reduce the probability of undesirable blood clots forming in the artery, the vein or the heart. This way, the anticoagulants allow the blood to remain liquid inside the vases and flow freely, because they block the action of the substances which cause coagulation. On the other hand, antiplatelet agents are medicines used for the inhibition of the aggregation and activation of the platelets.

**Keywords:** Vitamina K, antiagregantes, anticoagulantes, coágulo

## **BIOLOGY OF THE HIV-AIDS VIRUS - ANTI-RETROVIRALS**

***Adriana Matos, Ana Cerveira, Dina Marques, Eduarda Coelho, Jéssica Melo***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

HIV, Human Immunodeficiency Virus, is classified as retrovirus and lentivirus. Retroviruses because their genes are only condensed with RNA and lentivirus because their manifestation may come quite late. Like other viruses, a retrovirus also needs a host cell to multiply. This process of cell multiplication requires an additional step, which consists in the conversion of RNA into DNA, through reverse transcriptase. In this context rises the concept of AIDS, Acquired Immune Deficiency Syndrome, being this pathology a late consequence of an infection caused by HIV, being part of the last stage of HIV infection. The immune system and blood system will be attacked causing an autoimmune disease, meaning, T-cell lymphocytes recognize themselves as if they were an antigen, destroying the body's own defenses.

AIDS has no cure, but there are some antiretroviral treatments that can control its proliferation, increasing the individual's life span, such as reverse transcriptase inhibitors that subdivide in nucleosides and non-nucleosides, protease inhibitors, and fusion inhibitors.

HIV can assume different types of virus, HIV-1 and HIV-2, and their evolution will be different from individual to individual. Thanks to the vulnerability of the organism, the person becomes more susceptible to other diseases such as tuberculosis, pneumonia or even cancer. Some preventive measures are to avoid getting in contact with the blood of other individuals, not exchanging syringes, nail clippers, toothbrushes, other personal tools and always use a condom during sex. HIV transmission can be through unprotected sex, needle and syringe exchange while intravenous drug use and vertical transmission of the virus from mother to child during pregnancy, delivery and / or breastfeeding.

**Keywords:** HIV, retrovirus, anti-retroviral, auto immune disease, lymphocytes Thelper

## RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM/ ECA AND AT1 RECEPTORS INHIBITORS

***Duarte Gomes; Miguel Silva; Pedro Martins; Pedro Silva; Ricardo Pereira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

The Renin-Angiotensin-Aldosterone System (RAAS) performs an important function on blood pressure's regulation and electrolytic homeostasis.

Angiotensin II performs functions in constriction the blood veins and arterioles, and on aldosterone's liberation. She acts as RAAS's main meter and the hyperactivity of this system is related with the hypertension's development and other ways of cardiovascular and renal's diseases.

ECA and AT1 receptors Inhibitors pharmacologically the RAAS. The ECA Inhibitors act specifically on Angiotensin conversion enzyme, who catalyse the transformation of Angiotensin I in Angiotensin II, and also controls bradykinin and other peptides vasoactives degradation. So these practise their effects on All, bradikinin, nitric oxide, prostaglandins, reducing the blood pressure and promoting the antiproliferative effect on the blood vessels, on the heart and on the reins.

The Angiotensin II Receptor's Blockers block the RAAS, antagonizing selectively the All receptors, subtype AT1.

Exist two types of Angiotensin II receptors: subtype 1 (AT1) and subtype 2 (AT2). Those receptors measured the main actions of All, which are revelant on fisiopatology and on maintenance of arterial hypertension and cardiac insufficiency, mainly the vasoconstriction and the trophic effects on the blood vessels.

So the ECA and AT1 receptors Inhibitors block the RAAS achieving the reduction of the pression by various mechanisms, like the All vasoconstritor activity reduction, the increase of bradikinin's concentration, the reduction of the sympatic tonus, the upgrade of endotelial function and the and structural remodeling of blood vessels.

**Keywords:** Renin-Angiotensin-Aldosterone System; ECA; AT1 Receptors; Cardiovascular and Renal Diseases

## TREATMENTS BASED ON SEXUAL HORMONES

***Carolina Castanheira; Carolina Matias; Mariana Cardoso; Rita Gonçalves; Sara Umbelino***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

The gonads are organs that produce the gametes necessary for human reproduction. In addition to their reproductive function, the gonads are also glands of the endocrine system, responsible for the production of sex hormones. The aging process promotes significant changes in the production and balance of circulating levels of various sex hormones in men and women.

Estrogen is widely used in hormonal therapy and contraception. At menopause, women begin to produce less and less estrogen, and HT (Hormonal therapy) is prescribed to relieve symptoms such as mood changes and sweating. HT can be performed with isolated progestogens, isolated estrogens, cyclic or continuous estroprogestative.

HT is also used in maintenance of the bone mass and in osteoporosis, in post-menopause, related with osteoporotic fractures. In this case, HT shows a 50% decrease in the incidence of these fractures. The dose must be personalized and at least effective.

It is important to know that the goal of HT isn't to do hormonal replacement, but to get a new balance, that seeks to avoid the consequences of the deprivation of endogenous hormones.

Hormonal contraception (HC) consists in the association between estrogen and progestogen. It's temporary and reversible. This treatment is available in different ways of administration such as oral, intramuscular, subdermal implants and others. HC acts with the objective of blocking ovulation, by inhibiting the secretion of follicle-stimulating and luteinizing hormones. HC makes the uterine mucus thicker hindering the passage of sperm. It transforms endometrium unreceptive to implantation and alter the secretion and peristalsis of the fallopian tubes.

**Keywords:** Hormonal therapy, gonads, estrogens, progestogens, hormonal contraception

## **NON-ALCOHOLIC FATTY LIVER DISEASE, CHOLESTEROL AND STATINS METABOLISM**

***Ana Carolina Ferreira, Andreia Rodrigues, Cristiana Sobral, Euritse Diana Neto, Mariana Abreu, Mariana Lima***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Non-alcoholic fatty liver disease (NAFLD) is an abnormal accumulation of fat in liver cells. This disease usually develops in overweight people, with diabetes mellitus and elevated cholesterol levels.

The liver performs the various functions as synthesis of proteins and vitamins, elimination of toxins regulation of glycogen reserves, among others.

One of the risk factors for developing fatty liver is excess triglycerides and / or cholesterol in the blood. The long-term presence of fat in the liver leads to inflammation and cell death (non-alcoholic steatohepatitis - NASH), which in turn can progress to liver cirrhosis and / or hepatocellular carcinoma. One of the promoters of this type of inflammation/ disease is related with the diet of each individual so it becomes imperative to establish a healthy diet.

Cholesterol is a fat often perceived as a threat and harmful to health. The truth is that this only happens if the cholesterol is at levels higher than recommended. Cholesterol at acceptable levels this is an essential and beneficial substance for the body. It is subdivided in two lipoproteins with different functions: LDL ("bad cholesterol") and HDL ("good cholesterol").

Statins have a steroid structure and competitively inhibit, an enzyme responsible for formation of cholesterol in the liver. The production of LDL could be committed in cases of malfunctioning of the said enzyme, which could increase the HDL levels.

The most commonly used active ingredients to reduce LDL cholesterol levels are Simvastatin, Atorvastatin and Lovastatin.

**Keywords:** fat liver, NASH, cirrhosis, cholesterol, statins



## **INCRETINS, DP-4 INHIBITORS AND GLP-1 ANALOGUES**

***Adriana Dourado; Bárbara Faro; Daniela Resende; Maria João; Rita Abrantes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Incretins are a group of metabolic hormones that stimulate a decrease in the blood glucose levels. They're released after eating and increase the secretion of insulin (a peptide hormone produced in the pancreas that promotes the absorption of glucose by the cells). These hormones also interfere in the absorption of nutrients into the blood stream, they make this process slower by reducing the gastric emptying. Besides increasing the release of insulin incretins inhibit the release of glucagon, a peptide hormone also produced in the pancreas but with the opposite effect of insulin, it actually raises the concentration of glucose and fat in the blood.

GLP-1 is a hormone that has the ability to enhance the secretion of insulin so, we can say that GLP-1 acts as an incretin. The action of GLP-1 is decreased in patients with type 2 diabetes. Since it is proven that it can decrease blood sugar levels, substantial pharmaceutical research has therefore been directed towards the development of GLP-1-based treatment. This approach has been associated with weight loss and a lower risk of hyper and hypoglycemia, two important considerations for patients with type 2 diabetes.

However, this type of incretins can be easily inactivated by a protein called DP-4, this led to the production of DP-4 inhibitors, oral hypoglycemics that block DPP-4, resulting in an increase of incretin levels that will inhibit glucagon release and increase insulin secretion.

**Keywords:** Diabetes, DP-4 Inhibitors, GLP-1, Glucose, Incretins.

## INSULIN RESISTANCE MECHANISMS

***Bárbara Cardoso, Carolina Valeiro, Mariana Marques, Teresa Pinheiro, Pedro Ribeiro.***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

Insulin resistance is when certain cells don't respond properly to the insulin. This is the driving factor that leads to type 2 diabetes, gestational diabetes and prediabetes. Insulin allows cells to take in glucose and use it as fuel or as body fat which can lead to high blood sugar levels. Modern research has shown that diabetes can be combatted by treatment methods that reduce insulin resistance or alternatively taking via insulin injections to prevent pancreatic exhaustion.

There are four classes of hypoglycemic drugs, these are used in the treatment of type 2 diabetes to compensate for the lack of insulin:

- Sulfonylureas (increase beta-cell insulin secretion and insulin receptor sensitivity at peripheral target tissues, decrease hepatic glucose output), like Glibenclamide;
- Biguanides (decrease hepatic glucose production and gastrointestinal glucose absorption, increase target cell insulin sensitivity), such as Metformin;
- Thiazolidinediones (increase insulin receptor sensitivity, influence the production of gene products involved in lipid and glucose metabolism), for example Pioglitazone;
- Alpha-glucosidase inhibitors (Inhibit the upper gastrointestinal enzymes that convert dietary starch and other complex carbohydrates into simple sugars), for instance Acarbose;

Sodium-glucose cotransporters type 2 (SGLT2) is a low-affinity, high capacity glucose transporter located in the proximal tubule in the kidneys.

SGLT2 inhibitors reduce hyperglycemia by increasing urinary glucose excretion which lowers blood glucose levels and the excess glucose in the blood is removed via urine. However, there are some side effects associated to these inhibitors. The class of drugs used in this type of treatment are gliflozin, like dapagliflozina, canagliflozina, empagliflozina.

**Keywords:** Antidiabetics; SGLT2; Diabetes; Insulin Resistance.

## WHITE VS BROWN ADIPOSE TISSUE: ADIPOKINES

***Maria Martins, Deise Santos, Miguel Maia, Mariana Leal, Carla Pinto***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal*

There are two types of adipose tissue: white and brown. It has important functions in the body as energy reserve, thermal insulation, protection against mechanical shocks and secretion of hormones.

The white adipose tissue produces ATP and produces cytokines. The brown adipose tissue has by its main function the production of heat, either to keep us warm or to counterbalance the excessive intake of calories.

The adipose tissue presents paracrine, immune, cardiovascular and endocrine functions. It's responsible for producing vasoactive substances - adipokines.

The adipokines are cytokines (a group of proteins that express themselves and are secreted by adipose tissue). They play an important role in energy homeostasis, insulin sensitivity, immune response and vascular disease, they also are intrinsically related to states of excess and distribution of the body fat.

The main adipokines are leptin, resistin, visfatin, adiponectin, the acylation stimulator protein, tumor necrosis factor, interleukin-6, the inhibitor of the 1-activator of plasminogen and angiotensinogen.

1. Immune function - interleukin 6 and tumor necrosis factor  $\alpha$ ;
2. Cardiovascular function – angiotensinogen and plasminogen-1 activation inhibitor;
3. Metabolic function - adiponectin, resistin and visfatin;
4. Endocrine function – leptin.

**Keywords:** brown adipose tissue, white adipose tissue, adipokines

## HEARING SCREENING IN CHILDREN

***Carlos Mateus, Leonardo Costa, Filipa Maia, Patricia Sá, André Nunes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: In order to perform this investigation, it was necessary to perform auditory screenings on 56 children, aged between 12 and 16 years of age, from EB 2º and 3º Cycles Dr. João de Barros School. Objective: To identify hearing problems in children, so that they can be detected and treated as early as possible, in order to avoid consequences or so that they are not very serious. Methodologies: An anamnesis, an otoscopy, a tympanogram and a simple tonal audiogram, which evaluates 5 frequencies, were performed. Results: After the anamnesis it was possible to identify 21 children with tinnitus, of whom 20 were headphone users. In otoscopy, the majority had no alterations, but a foreign body was found in one of the ears of one child, another kid had a dense membrane and 5 children had obliterating cerumen. In the tympanogram of the right ear, 50 children had a type A, one kid had a type C1 and 4 children had a type C2. In the left ear, 51 children had a type A, one had a type B, one had a type C1 and two children had a type C2. When the audiogram was performed, it was verified that 49 children had a positive result in all frequencies and 7 children had difficulty responding to some frequencies. Conclusions: It was possible to conclude that 42 children had passed the screening and the remaining 14 had failed, being referred to O.R.L or asking for examinations within a month and a half. And yet the use of headphones is in some way related to the presence of tinnitus.

**Keywords:** children, tinnitus, phones

## HEARING SCREENING IN CHILDREN

**Ana Correia, Ana Catarina Travassos, Catarina Carvalheiro, Daniela Jesus, Ivone Fazenda, Maria Gomes**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: The hearing screening is an evaluation performed by an audiologist where several tests such as otoscopy, impedance, simple tonal audiometry and otoacoustic emissions are performed. In the protocol is also inserted the anamnesis. Screening aims to prevent, identify, diagnose, and minimize hearing loss. It is important to carry out school-age screenings since there is a set of pathologies that only manifest themselves during childhood, due to a progressive worsening of hearing if there is hearing loss, and, thus, the acquisition of knowledge and school performance can be compromised. Objective: With this work we intend to study the hearing of children in order to identify early changes in their hearing. Methodology: To perform this screening, the following tests were done: Otoscopy, Tympanogram and hearing evaluation through the Pass / Fail Test at 20 dB HL, where the 1000, 2000 and 4000 Hz frequencies were tested. Results: Of the 49 individuals who performed the screening, only 42 children aged 5 to 13 years were studied, 6 of them didn't pass, so they were advised to perform the O.R.L test and repeat the tympanogram within a month and a half. Conclusion: Hearing screening in childhood / adolescence is extremely important because hearing influences learning, socialization and communication. Therefore, the screening is essential and with a simple hearing test it is possible to detect about 90% of the cases of hearing loss even if the child at birth did not have auditory changes.

**Keywords:** Hearing screening, children

## AUDITORY SCREENING

***Andreia Gouveia, Ângela Marques, Ana Beatriz Rodrigues, Inês Tavares, Joana Fernandes, Juliana Pinho, Margarida Teixeira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

**Introduction:** This study focuses on hearing screening for children attending the Almas de Freire School. **Objective:** The objective of the screening is the detection of early hearing deficits in order to allow a timely diagnosis and intervention that allows a reduction of the possible consequences of these deficits. **Methodologies:** The following exams were performed: otoscopy, tympanogram and simple tonal audiogram. **Results:** Through otoscopy, it was verified that 2 children presented transtympanic tube in both ears. With the tympanogram, it was verified that in the right ear, 8 children presented type A tympanogram, 2 had type C2 and another 2 had type B tympanogram, and the same was found in relation to the left ear. It should also be noted that when the audiogram was performed, 13 of the 15 children answered all the frequencies tested through this examination, and only a few frequencies were not answered by the remaining 2 children. **Conclusions:** Through the above examinations, we conclude that approximately 73% of children questioned passed the auditory screening.

**Keywords:** screenings; hearing; prevention; audiometry.

## HEARING SCREENING IN TEENAGERS

***Andreia Garcia, Carolina Rodrigues, Daniela Gomes, Juelma Tavares, Lorryayne Madeira, Silvânia Monteiro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

**Introduction:** The screening of hearing it's a fast and concise, which the goals is to identify early pathologies and hearing deficits. The principal risk factor associated to hearing loss in teenagers is the noise exposure. More and more teenagers have irreversible hearing issues, due to prolonged exposure to high intensity sounds, such as night clubs and/or concerts/festivals or through the long use of earphones. The hearing screening on young adults aims to diagnose cases of hypoacusis that might interfere with learning in school and that have not been previously diagnosed. **Objective:** Study the incidence of pathologies and hearing deficits on a school in Figueira da Foz, on a total of 39 7th grade students with ages between 12 and 14 years old. **Methodologies:** The same protocol was applied to all students that consisted on an audiologic anamnesis, screening audiometric exam and tympanometry, being considered as an inclusion criteria a previous allowance from the parents/person in charge of the education. **Results:** Some otological issues were identified and there was 15 teenagers that didn't pass on the hearing screening and as result they were referred to an E.N.T doctor (Ear, Nose and Throat doctor) to do a full evaluation. **Conclusion:** The hearing screenings should be done early in life, with the main task as an orientation towards young adults in a way of preventing hearing issues occurring alongside the leaning process.

**Keywords:** School Auditory Screening and Auditory Screening in Young People

## A WHOLE NEW WORLD OF TRADITIONAL FOODS

***Diana Filipe, Jéssica Quintas, Marisa Geraledes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** The Food Industry is constantly evolving, technology plays an important role in this sector. Vegetarianism is a vegetable-based food style, (excludes meat, fish and may not include all animal products). Scientific-technical advances allow the food production to be better adapted to the consumer, with more sustainable and efficient processes, so more food options have arisen.

**Aim:** Understand the relevance of vegetarian products in the market; recognize the technological process of the vegetable alheira; gather the nutritional benefits of this product compared to “traditional” alheiras.

**Methods:** A questionnaire was elaborated and applied, to realize the importance of vegetarian options of traditional Portuguese foods, such as alheira. It was visited an alheiras industry and were observed in loco the technological process and processing. Eight products (vegetable and meat) were compared at nutritional and monetary level.

**Results:** 107 individuals answered the questionnaire, mostly vegetarians/vegans (83.2%); regarding the importance of vegetarian options, 61.7% considered it very important; comparing the nutritional level, 97.2% considered that the vegetarian option would be the healthiest. Regarding nutritional values, they're not very divergent. However, vegetarian options are better than the meat option, having a lower saturated fats content and a higher fiber content. The technological process was summarized in the following steps: Receiving raw materials; Storage; Preparation (wading, cooking, washing); Mixing; Filling; Smoking; Packaging; Storage of finished product; Distribution.

**Conclusion:** There is a growing interest in products of plant origin. The vegetable alheira is a more conscious option, than the traditional alheira, not only for vegetarians but for the general population .

**Keywords:** Food technology, vegetarianism, vegetarian diet, vegetable alheira



## MILK CHOCOLATE: FROM BEANS TO BARS

*Inês Neto, Mariana Serra, Núria Coelho*

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Traditionally, chocolate has been consumed more for pleasure than for nutritional reasons as it has been considered a non-healthy food, due to its high fat and sugar contents. In 2014, 67.5% of continental residents aged 15 and over consumed chocolates, existing a sustained growth trend (around 2kg/year/'per capita' at the end of 2017).

This study aims to know and characterize the unit operations of the industrial process of milk chocolate and consequent nutritional implications.

It was conducted a research on ScienceDirect and Pubmed databases using the keywords "chocolate", "cocoa", "production", "composition" and "consume". The search was limited to articles in english between 2011 and 2017.

The process begins with the harvest of the cocoa beans, submitted to fermentation in order to extract the grains. At the production site, a complex industrial transformation takes place involving cleaning, roasting, winnowing, grinding, pressing, blending, refining, conching and tempering. As a result, the obtained cocoa paste when pressed originates cocoa powder and butter. Milk chocolate is originated from cocoa butter and paste aswell as dehydrated or condensed milk powder, sugar and an emulsifier (lecithin).

This type of chocolate has a higher energy, fat and sugar content compared to raw cocoa. The lower cocoa content translates into a lower antioxidant concentration.

Depending on its production process, chocolate's nutritional value may vary: lower fat and sugar contents and a higher percentage of cocoa ( $\geq 70\%$ ), like in certain dark chocolates, should be preferred over other versions of this food product with different characteristics.

**Keywords:** Milk; Chocolate; Production; Cocoa; Composition

## FROM SOY TO YOGURT

***Maria Ávila, Raquel Martins, Rita Santiago***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Soybeans are a leguminous rich in: proteins, fibre, antioxidants, isoflavones, saponins, phytase, phytosterols and minerals. In 2009, 26,8% of Portuguese adults consumed dairy yogurt every day and in 2016, the average daily consumption was estimated at 62g/day. Additionally, the availability for consumption of soy-products has been increasing to the detriment of dairy products.

AIM: Describe the industrial production process of soy yogurt, comparing its nutritional properties with dairy yogurt.

Material & Methods: The production process was described after contact with soy yoghurt producing company and afterward the analysis of the nutritional values by comparing the information available on the product label as also in the Food and Nutritional Composition Table.

Results: After receipt the soybeans in the production units, they are peeled, and then passed through hot water, ground, and passed through cold water. The soy liquid is separated from the pulp (okara), and afterward, microbiological cultures are added to make yoghurt consistency. In each 100g of soy yoghurt there are: 43kcal, 2.3g of lipids (0.4g saturated) 0.5g HC (0g sugars), 4g protein, 0.8g Fiber and 0.18g sodium. The same amount of natural yogurt contains: 54kcal, 1.8g lipid (1g saturated), 5g HC (5g sugars), 4.2g protein, 0g fiber, 62mg sodium and 118mg of calcium.

Conclusion: Soy yogurt presents the same benefits as traditional yogurt, and yet is free of lactose, casein and cholesterol and has low saturated fat content, even though it's not a good source of calcium.

**Keywords:** Soy, Procedure, Soy yogurt, Food Technology

## COCONUT OIL, IS HE THE GOOD GUY?

**A. Baptista, A. Martins, M. Duarte**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Coconut oil is being heavily promoted as a healthy oil and used in both kitchen and cosmetics; its consumption has been increasing.

**AIM:** The aim of this work is to understand the industrial process of the coconut oil, compare the different types and classifications, do a nutritional analysis, and discover the advantages and disadvantages compared to other oils.

**MATERIAL & METHODS:** In order to understand the knowledge about this oil, we elaborated a quiz that we shared on social media. The scientific research was done by the Google, Scielo and Mendeley platforms and was analysed articles since 1991.

**RESULTS:** There are many ways to extract oil from the coconut, so it can be classified as organic or refined, but the healthiest way is cold pressed. Happens by breaking the emulsion without heating the coconut milk. The cream is separated, and then it's cold pressed.

Contains a high proportion of medium chain fatty acids. There are benefits scientifically proved such as improve HDL and LDL cholesterol levels and has a higher boiling point which might be relevant in some cook methods than olive oil.

We obtained 589 answers from our quiz and observed that is mostly consumed by women and exists a lot of doubt classifying the fat type and the best oil for consumption.

**CONCLUSION:** The organic is better than the refined oil because the refining process interferes with the nutritional proprieties and might contain chemicals compounds.

However, the several studies we found support that the olive oil still is the best face to consume.

**Keywords:** Coconut oil, cold pressing, olive oil, refining process, clinical effects

## **HAMBURGER: CONSUMPTION, INDUSTRIAL PROCESS AND NUTRITIONAL IMPLICATIONS**

***Mariana Marques, Margarida Sá Marta, Maria Santos***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: In Portugal, 2.6% of individuals eat more than 50g of processed meat daily. Hamburger is the most processed meat eaten at lunch and dinner. Meat, which is an excellent source of vital vitamins and nutrients, provides high-value protein and fat.

AIM: To characterize the consumption of meat derivatives in a younger populations; To describe the technological process of the most consumed one at main meals and the nutritional implications of the this process in the nutritional value of them, compared to origin meat.

Material & Methods: The characterization of consumption was conducted through an inquiry about meat and processed meat consumption answered by young people aged between 18 and 25. To describe the technological process was realized a technical visit to the Irmãos Monteiros industry to watch hamburgers production criteria since the feedstock until the final product.

Additionally, literature review (2009-2018) was conducted using databases PubMed, Nature and ScienceDirect, employing as key-words "Processed meat consumption", "Nutritional impact of hamburger consumption" and "Saturated fat intake".

Results: The hamburger, was the most consumed one, after ham, by respondents. The beef burger is the most consumed. During food production, the meat is processed semi-frozen, is pre-minced, mixed, minced again and deep-frozen after processing. Nutritionally, the hamburger, shows a decrease in protein content and a caloric, but a lipid and sodium increase in relation to the feedstock.

Conclusion: Food process have an unlikely impact in nutritional value of hamburger. However, attending the higher consumption of them it is necessary to develop strategies to improve nutritional quality of these options.

**Keywords:** Hamburger; Food consumption; Hamburgers production; Feedstock; Unitary operations.

## DEHYDRATED EGG WHITE: THE GREATEST ALLY IN SPORT?

**S. Almeida, M. Magalhães, M. Peireso**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** The egg has been considered a "bestseller" food for those who love sports. However, attention is directed to the consumption of egg white, specifically to its main constituent protein, albumin. In spite of your high biological value protein is essential for muscle regeneration and hypertrophy, but your consumption in natural have a high microbiologic concern.

**AIM:** To evaluate the industrial process of dehydrated egg white, as well as the benefits of its use in relation to the egg in nature.

**MATERIAL & METHODS:** The keywords "dehydrated egg white" and "albumin" were used to consult articles and systematic reviews from 2011, using Mendeley, PubMed and Google Scholar.

**RESULTS:** With the advances of technology, it is now possible to obtain dehydrated egg white, through a separation, pasteurization and dehydration process. At 54.5°C the activity of the catalase enzyme is substantially destroyed, but nutritionally has less tryptophan and water-soluble vitamins than whole egg and higher content of Calcium, Magnesium, Phosphorus and Potassium.

Once in nature, for every 100g of egg white, there is 10.9g of protein, while the egg white powder contains 11g of protein per 14g, which makes it more valuable to use it in sports.

**CONCLUSION:** Egg white powder seems to be an effective and practical option to obtain the protein requirements in a smaller quantity of food, to achieve a good muscle recovery. The processes suffered during the industrial procedure make it a safer food, free of pathogenic bacteria, with a greater validity and a little nutritional loss.

**Keywords:** Dehydrated egg white; albumin; sports and protein

## **VEGETARIAN FOOD: ALWAYS HEALTHY FOOD?**

***Adriana Loureiro, Beatriz Curado and Cristiana Lopes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** It's emerging the search for alternatives to the animal protein. Companies try to meet market requirements and try to keep the organoleptic characteristics of the traditional product. The soy sausages are an example of this product pursued by vegetarians.

**Aim:** The objective of this paper is to know the technological process of this product and compare nutritional values of similar foods.

**Methods:** To realize this work, we have analyzed nutritional labels and searched for scientific articles in Scielo, Mendeley and PubMed, since 2012, using the key-words soy sausage, pork sausage, vegetarian food.

**Results:** The technological process uses the soy protein isolate with added spices and preservatives. This mixture is embedded in an artificial gut, boiled in controlled temperature/humidity room. Posteriorly they are cooled in frozen water and packed in modified atmosphere.

The soy granules contain an energetic and protein value superior to soy sausage, containing fewer lipids and carbohydrates. Comparing the soy sausage with the pork sausage, we conclude that the first one has approximately more 20% calories, 18% protein and 30% fat. The pork sausage has more 67% saturated fat, 56% carbohydrates. The economical price of the soy product is 70% higher price than pork sausage.

**Conclusion:** Sausages should not regularly be consumed in any diet. Vegetarian people should opt for soy granules instead of soy sausages because the macronutrient value is much more appropriate. Also, they are consumed in a minor amount in a meal.

**Keywords:** Soy sausage, technological process, pork sausage, soy granules

## **CANNED TUNA - WHICH ONE TO CHOOSE?**

***Ana Vitória, Ana Rita Lucas, Catarina Rocha e Filipa Alves***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Tuna fishing has been a part of human culture, to preserve the fish canning is the most used form. Canned tuna must be prepared from fresh or frozen raw material, with or not cover liquid, and Packed in a sealed container (heat treatment).

**AIM:** The study which one is the best option of canned tuna and possible nutritional changes in the industrial process.

**MATERIAL & METHODS :** The information was acquired through Mendeley's article survey (since 2008) using the keywords canned tuna, tuna, processes, tuna production, and also through the process flow diagram provided by a Portuguese production company.

**RESULTS:** The production phases are selection, treatment and washing of fish; cans packaging; pre-baking; coating liquid addition; closure; sterilisation and marking. This preservation process doesn't modify the nature of the proteins, lipids and carbohydrates. The fish proteins retain the biological value, being hydrolysed, facilitates their digestion. The heat treatment of canning and the sterilisation technique guarantees the maintenance of the vitamins. Canned tuna in oil or olive oil has a higher caloric value because of its fat content (W3 polyunsaturated is outstanding).

**CONCLUSION:** Canned tuna is a simple, quick and convenient option for meals away from home. Tuna is nutritionally balanced and constituting one of the protein sources with the highest biological valour, the best options are in water and olive oil and are recommended for all ages and an excellent choice for athletes and it is affordable.

**Keywords:** Food technology, food industry, nutrition, tuna, canned tuna.

## ANTIOXIDANT CAPACITY OF FRUIT JAM

***Pedro Mendes, Sara Frasco, Sara Miranda***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** The antioxidants have been recognized as important factors in reduction of the chronic diseases risk. Fruits and vegetables contain a wide variety of phytochemicals compounds that may help to protect the cellular systems. The transformation process of foods can cause a reduction in antioxidant activity, which can reduce the benefic effects for health. The production of jams brings countless challenges as the preservation of benefic compounds that can be found in raw fruit.

**AIM:** Realize if production process of jams can influence the antioxidant activity found in raw fruit.

**MATERIAL & METHODS:** Literature review using the data base ScienceDirect with keywords: "fruit jam", "antioxidant capacity", and "jam production" was conducted. The articles were selected after reading the title and the abstract.

**RESULTS:** Jams are produced by boiling fruit pulp with sugar, pectin, acid and other substances. Using an intense thermal treatment, the mix is cooked until the desired consistency is obtained. The oxygen exposition, inducing the enzymatic activity, heat and light can reduce the antioxidant properties of the product. Processed products tend to have lower nutritional values when compared to fresh fruit. There is a significant reduction of the nutritive values of fruit jam when storage at high temperature. By using other methods aside from the conventional, processing time can be shortened which may contribute to a better and more desirable product.

**CONCLUSION:** As a consequence of the processing methods, fruit jams have less antioxidant capacity than fresh fruits. Other methods can be used to achieve an higher nutritional quality product.

**Keywords:** "Fruit jams", "antioxidant capacity"



## **SOY DRINK: A TREND OR A REPLACEMENT?**

***Amilcar Duarte, Alexandra Morais, Ana Monteiro, Ana Soares***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Soy drink it's a popular alternative to milk, is recommended to allergic to cow's milk protein, lactose intolerant, vegans individuals and to the population that wants an alternative. We intend to compare soy drink to milk in nutritional levels and in its processing.

**METHODS:** The research for scientific articles and information related to soy drinks was done in some producers' websites and in ScienceDirect platform. The search was made using soy drink, milk, soya beans, process and food technology and the articles were analysed since 2010. An online questionnaire was also applied, with the intention to evaluate the percentage of people that consumed soy drink and their reasons.

**RESULTS:** The questionnaire results showed that 31.2% of the population consumes soy drink and 42% finds soy drink healthier than milk.

Comparing soy drink with half-fat cow's milk, it has 23% more lipids, 33% more calcium, 63% fewer carbohydrates and approximately the same amount of protein.

Milk is subjected to a standard treatment resorting only to physical processes while soya beans are submitted to several processes, outer layers are removed, the beans passed through hot and cold water and after it's separated from the pulp.

**DISCUSSION AND CONCLUSION:** In conclusion, it was verified that soy drink has similar values to those of milk, and that can be compared to it. Soy drink is best suited for breakfast and snacks, and should not be eaten at lunch and dinner, so it won't interfere with iron absorption.

**Keywords:** Soy drink, milk, soya beans, process, food technology

## THE TECHNOLOGICAL PROCESS BEHIND DEHYDRATED APPLE

***Daniela Pires, Marta Silva, Micaela Ângelo***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: Red apples are dehydrated and used as a healthy snack. Harvest process takes start in August and finishes in October. Small apples, namely the ones that aren't accepted by supermarkets, are privileged.

AIM: To characterize the technological process of dehydration and the nutritional and physico-chemical changes compared to the apple in nature.

Material & Methods: Literature review was conducted using databases Science direct, Scielo and NCBI, using keywords "apple dehydration"; "hot air-drying apples"; "apple dehydration quality"; "dried apples properties"; To additional information, personal contact with the company was performed.

Results: Initially, the apples are received, washed and hygienized. Then, they are selected, and transported to the peeling and cutting operation. The washing process is practiced again, and the apples enter in hot air-drying furnaces, in order to initiate the dehydration. Finally, the apples are packed.

Discussion: Dehydration process reduces the moisture content in 90%, providing a crunchy and healthy snack. The water removal prevents the growth and reproduction of microorganisms that cause putrefaction. Furthermore, it occurs a substantial weight and volume reduction, which minimizes the package and the transportation costs. Unfortunately, hot air-drying dehydration quickens color and flavor degradation, and it may cause an undesirable hardening. The macronutrients, such as fiber, as well as micronutrients, are affected.

Conclusion: Water removal causes physico-chemical changes in apple tissues. Besides that, the content in fiber and sugar increases.

**Keywords:** apple dehydration; hot-air drying; technological process

## **POTATOES CHIPS: WHAT REMAINS?**

***A. Braz, A. Fernandes, M. Albuquerque***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Despite its origin being uncertain, everywhere the potato chips are recognized as the culinary process result that consists of frying potatoes in oil or other type of fat.

With this work, we intend to understand the technological process that goes from the potato "in natura" to potato chips, and if during this process there are nutritional losses and draw a comparison between the final product and the original product. Finally, we aim to understand if this product is interesting from a nutritional point of view and suitable for a healthy eating pattern.

**METHODS:** The elaboration of this work was based in the contact of companies that manufacture this type of products, research of scientific articles in online platforms Science Direct since 2002 with the keywords, potato chips, acrylamide and potato's process.

**RESULTS:** At the beginning of the process, the potatoes undergo a process of selection, washing, peeling, selection by calibre, cutting according to the desired form, drying of excess water through air, frying, convection to remove excess oil, inspection of irregularities in the potatoes after frying, flavoring with salt and flavors, so that their flavor and consistency are more appealing, packing and storage.

The potatoes chips go through a process of frying at high temperature, 180°C, that has the ability to decrease the amount of water in the food suffering chemical reactions that release acrylamide, a substance harmful to health.

**DISCUSSION AND CONCLUSION:** Relatively with the original food, the potato chips have no nutritional benefit because they have losses such as unsaturated fatty acids, increased energy density, formation of trans fatty acids and higher salt content.

**Keywords:** Potato, acrylamide, potatoes chips

## THE LAN BLOOD GROUP

***Maria Beatriz Henriques; Maria Helena Timotio; Mariana Campos; Tiago Casola***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

LAN (Langereis 0.33) is a blood group that was only officially recognized in 2012 by the International Society of Blood Transfusion, although the antigen was firstly reported in 1961. The *ABCB6* gene (chromosome 2q36, 19 exons) encodes a polypeptide, with the same name, known as a porphyrin transporter, essential for heme biosynthesis. The *ABCB6* is widely expressed, his higher percentage of expression can be found in several organs (heart, skeleton, muscle, fetal liver cell). The protein is also expressed, in a lower percentage, in mitochondrial membrane. The Lan (+) phenotype occurs in more than 99% of World population, and Lan (-) phenotype occurs in about 1 in 20.000 people (Caucasian, Black and Japanese). The Lan (-) blood group phenotype is caused by homozygous or compound heterozygous mutation in the *ABCB6* gene and is transmitted as an autosomal recessive trait. People LAN (-) who doesn't express *ABCB6*, maybe be the result of several different molecular mechanisms. This blood group is clinically significant when the immune system of LAN (-) person was previously stimulated, for example, by transfusion of a Lan (+) red blood cells or during a pregnancy, which can results in hemolytic transfusion reactions and hemolytic disease of the fetus and newborn.

**Keywords:** LAN antigen, gene, phenotype, transfusion.

## THE LANDSTEINERWIENER BLOOD GROUP – 016 ISBT

***Cátia Lopes, Daniel Coelho, Gonçalo Simões, Inês Melo***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

Landsteiner and Wiener, discovered in 1940, the immune seron “anti-Rh”, through the immunization of rabbits and guinea pigs with the red cells of rhesus monkeys. This immune seron reacted with 85% of adult human blood samples and played an important role in our understanding of the hemolytic disease of the fetus and newborn. For many years, it was considered the animal equivalent of the human antigen (Ag) responsible for erythroblastosis foetalis . Initially it was believed that the “anti-Rh” antibodies (Ab’s) recognized the RhD Ag, however it was later proved that the Ab’s developed in 1940, reacted with a non-Rh Ag, being, therefore, the “Rhesus” Ag renamed “LW” after the two discovers, placing sixteenth on the International Society of Blood Transfusion table of blood group systems.

Biochemical studies have located the Ag on a different protein from proteins of the Rh aig, intercellular adhesion molecule-4 (ICAM-4), which is codified by a gene on chromosome 19p13. However, the independence of LW and D still exists. This system presents 3 Ag (LWa, LWb, LWab). The LW and RhD Ag are genetically independent but phenotypically related. LW Ag is expressed more strongly on RhD positive cells than on RhD negative cells.

A transient loss of LW Ag’s has been described in pregnancy and patients with diseases, particularly Hodgkin’s disease, lymphoma, leukemia, sarcoma, and other forms of malignancy. It is believed that LW Ag’s also plays a pathophysiologic role in the development of vaso-occlusion in sickle cell disease.

**Keywords:** ICAM-4, Erythroblastosis Foetalis, Landsteiner and Wiener, Blood Group, LW antigen.

## THE INDIAN BLOOD GROUP (023-ISBT)

*Inês Dias, Lucie Cordeiro, Rúben Nunes, Xia Haojie*

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

The Indian blood group with the number 023 on the International Society of Blood and Transfusion, is composed by the antithetical antigens (Ag's) IN(a) and IN(b) and the INFI and INJA.

The ag's of blood group systems are encoded by the *CD44* gene located at chromosome 11p13. The Ag IN(a) is expressed in 0.1% of Caucasians, 2.9% of Indians, 10.6% of Iranians and about 11.8% of Arabic population living in Bombay. Meanwhile, the antigen IN(b) is very frequent all over the World. This two Ag's polymorphism represented a 252G>C substitution of CD44, encoding R46P. But system was further expanded in 2007 when two more Ag's, namely, INFI and INJA were recognized as part of the system. Of these, the INFI was detected among the Moroccans, while the INJA was found among the individuals who had their origin in the Indian subcontinent. The lack of INFI and INJA results from homozygosity for mutations encoding H85Q and T163R in the *CD44* gene. Besides, CD44 is expressed in erythrocytes, in leukocytes and in other tissues. This glycoprotein is involved in several functions: leukocyte adhesion to endothelial cells, response and immunological stimulus and participation in the activation of T and B cells. There was never reported transfusions reactions, because the probability of patients with anti-In(a) being transfused with In(a+) blood is greatly reduced. The discovery that anti-In(b) may cause hemolytic disease of the fetus and newborn may be related to the fact that the anti-In(b) is inhibited/camouflaged by the CD44 present in the placenta or tissues.

**Keywords:** Indian Blood Group, CD44 molecule, transfusions reactions, antibodies, antigens, blood group.

## THE FORSSMAN BLOOD GROUP - 031 ISBT

**Alexandre Pimentel, Cláudia Gonçalves, Flávia Pinto, Mara Guedes**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

The Forssman antigen(Ag) was named in honour of the Swedish pathologist John F. Forssman (1868-1947) who reported in 1911 that antibodies (Ab's) against snake organ homogenates reacted with sheep erythrocytes, causing hemolysis, thereby making the detection of Ab's anti-Forssman feasible. The specificity of Forssman has been described in many species of animals, plants and bacteria. In some species, the Forssman Ag is an Ag of development and differentiation, being mainly expressed on the cell surface.

Humans are usually negative for Forssman Ag, without functional FS, however, in individuals with *Apa*e phenotype, they express FORS1 in their red blood cells. The *Apa*e phenotype carries a dominant active *GBGT1* gene and expresses Forssman Ag in erythrocytes. The documentation was performed by replacing a set of codons, 266 to 268 of human AT (A glycosyltransferase) GlyGlyAla from FS encoded by *GBGT1*, allowing the enzyme to produce the FORS1 Ag, although FS activity was poor.

The *GBGT1* gene encodes A and B glycosyltransferases, Forssman glycolipid synthase (FS) and a Forssman oligosaccharide Ag (FORS1). Consequently, the FORS system was recognized as the 31<sup>st</sup> blood group system.

**Keywords:** Forssman antigen, FORS1, Forssman glycolipid, FORS blood group

## THE AUGUSTINE BLOOD GROUP

***Maria Soares, Michele Herdy, Morgana Moreira, Tânia Cruz***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

The Augustine Blood group was reported in 1967 by Applewhaite *et al* but it was not until 2015 that was accepted as a new blood group system.

Classified as Augustine, number 36 and the least immunogenic of International Society of Blood Transfusion table of blood group systems, its genetics information is contained in the gene *SLC29A1* located on chromosome 6, that encodes the antigen (Ag) Ata on the surface of erythrocytes and the expression of the protein equilibrative nucleoside transporter 1 (ENT1) which carries the Ag. The genetics of this group has an autosomal dominant inheritance pattern so the possible phenotypes are At(a+), At(a-) and null phenotype.

People with At(a+) phenotype do not have ENT1 protein mutation, so it places the Ag in a different way, whereas people who have At(a-) phenotype have a typical genotype (AUG:-1,2) which results from a homozygosity that encodes an amino acid mutation which leads to a different Ag. However, the null phenotype (AUG:-1,-2) results from homozygosity for a splice site mutation that causes the absence of the ENT1 protein. This blood group is only relevant in people with African ancestors once they are more likely to have At(a-) phenotype. Anti-Ata has been implicated in immediate and delayed hemolytic transfusion reactions, hemolytic disease of the fetus and newborn, although this only occurs in sporadic cases. The null phenotype may be associated with pseudogout and abnormal bone calcification.

The alloantibodies described are from immunoglobulin class G, which are immune and irregular. The optimal technique to study them is the Indirect Antiglobulin Test.

**Keywords:** Antibody, Antigen, ENT1 protein, Indirect Antiglobulin Test.



## THE SCIANNA BLOOD GROUP 013 ISBT

***Carolina Melo, Guilherme Puga, Maria Madeira, Milene Gomes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Ciências Biomédicas Laboratoriais, Coimbra, Portugal*

The Scianna is the 13<sup>th</sup> blood group system recognized by the International Society of Blood Transfusion. Originally characterized by only two antigens (Ag's), this system now consists of 7 Ag's: one pair of antithetical Ag's (the high-frequency antigen (Ag) Sc1 and the low-frequency Ag Sc2), one low-frequency Ag (Sc4) and four other high-frequency Ag (Sc3, Sc5, Sc6, Sc7).

The Sc3 Ag is expressed in every red blood cell (RBC), except in people with the Sc:-1,-2 phenotype, which is the least frequent. Contrarily, the most common phenotype in the population is Sc:1,-2.

The Ag's are located in a single-pass transmembrane glycoprotein from the immunoglobulin superfamily, designated by erythroblast membrane-associated protein (ERMAP ). The ERMAP's function is still unknown, although it is thought to be a mediator of cell adhesion and may act as a specific signalling receptor and transducer for RBC.

This protein is encoded by the SC gene, located in the short arm of chromosome 1 at position 34.2 (1p34.2). The polymorphisms in this gene are responsible for the Scianna system.

Antibodies against the Scianna blood group might be allo or autoantibodies, and have been reported to be related with mild to moderate transfusion reactions and mild haemolytic disease of the new-born, hence the clinical relevance of the investigation of this blood group.

**Keywords:** Blood Group Antigens, New-born, Scianna antibody, Blood Transfusion, Polymorphism, Genetic, Alloantibodies, Autoantibodies.

## **CLIMATE CHANGE AND ITS HEALTH INFLUENCES**

***Bárbara Ascenso, Bárbara Sofia, Filipa Janicas***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The Earth has been undergoing constant climate change due to natural and anthropogenic factors and consequently has been accelerating the tendency of the temperature rise due to the emission of polluting gases. Health professionals should be aware of them and their implications on the population in order to implement prevention-related measures to promote health and prevent us from being exposed to extreme weather events.

The objective of this study was to evaluate the knowledge and good practices of future health professionals in the face of climate change.

A bibliographic research on the subject was carried out and a questionnaire was applied to the students of the Coimbra Health School.

From the application of the questionnaire to 23 students it was verified that the question "How do you think an Environmental Health Technician can intervene in climate change?" It is clear that most respondents know the functions of a EHT and have an idea of how they can intervene according to the problem in question.

It was concluded that the impacts resulting from so-called natural catastrophes are associated with the unsustainable lifestyle of modern societies. So, it is up to everyone to change current living standards, adopting sustainable behaviors, for the environment, but also for human survival.

**Keywords:** Climate, health, prevention, changes, temperature

## **DOMESTIC AND LEISURE ACCIDENTS - PRIMARY HEALTH CARE**

***Beatriz Pais; Cristina Trigueiro; Sara Ré***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The increase in the aging Portuguese population has been accompanied by fragility and incapacity, bringing with it its own diseases, with more frequent demand for health services and diversity of levels of care. Primary care is essential health care based on practical methods and technologies, within the universal reach of all individuals. There are risk factors in the domestic environment that can contribute to the existence of falls, leading to serious injuries and sequelae. The objective of the study was to determine the frequencies and trends related to the occurrence of domestic and leisure accidents, to identify hazardous situations and dangerous products involved. A bibliographical research on the subject was carried out and a questionnaire was applied to the population (100 people). Of the respondents, 37% live in a suburban or residential area, 67% live in unladen streets, so the accident rate is high. When there are steps between the street and the entrance, 72% responded in the affirmative, with access difficulties for disabled people and baby carriages unless they are aided by other people, putting them at risk. In questions related to the occurrence of accidents, respondents said that the most frequent in the last 2 years were burns (45%). At the origin of the accidents, the most pointed were kitchen equipment (21%), knives and cutlery (15%). In this way the prevention of falls is essential for a safe and active aging. Education about these risk and protection factors is an essential strategy for the dissemination of information.

**Keywords:** Aged population, Primary health care, Risk factors, Domestic environment

## EATING HABITS IN CHILDREN OF THE 1ST CYCLE OF SCHOOL

***Inês Simões, Mariana Martinho, Marisa Ferreira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

For the children to have a good development the feeding is a fundamental point. The family and school have influences on children's eating patterns.

The objective of this study was to know the eating behaviors in children of the 1st cycle of school and to understand which factors can influence the poor eating habits in these. The methodology used was the application of a questionnaire to the children, being the study also based on scientific articles of other authors.

In the study sample, 95 children were surveyed. Since breakfast is the most important meal of the day, results on children's responses show that the most consumed foods are milk (86%), cereals (61%) and bread (29%). It was also revealed that 14% of children do not drink milk for breakfast. When asked about what they eat and drink at meal times, 68% report eating a Healthy Whole Meal (soup, 2nd dish, fruit (gelatin, or yogurt)) and drinking water.

Marketing and advertising are said to have a marked influence on children as companies use child-directed animations in their food packaging, most of which are high-calorie products.

It was concluded that parents do indeed influence the feeding of children, sometimes negative. It was found that some of these children have a balanced diet, but there are families that can not give their children a full meal, and this shows that the lack of economic power in today's society is still perceptible.

**Keywords:** eating habits, children, health education

## **WATER FOOTPRINT**

***André Sena, João Lima, Mariana Sousa***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The water is an essential resource for the quality of life of the human being, so it's necessary to preserve it. The Water Footprint is an indicator of sustainability, which aims at the rational use of water resources. It is also an indicator of human water consumption and is defined by the total volume of water used during the production of goods and services. This term can be divided into three types: Blue Water Footprint, Green Water Footprint and Gray Water Footprint. By analysing the Ecological Footprints of Water and Carbon it was possible to perceive that the human being is living in an unsustainable way. The objective of this study was to evaluate the Water Footprint of the students of Polytechnic Institute of Coimbra. For the accomplishment of the study a bibliographical review on the subject and the application of a questionnaire was carried out. From the studies were obtained the following results: The larger portion of the students ate meat 3-5 times a week being chicken their favorite dish. Also, the majority of the students spends 5-10 minutes taking a shower and they need at most 3 minutes to brush their teeth. Among sectors, the one that spends the most water is the nutritive one. The population we are studying have a water footprint of a 24978 liters per person. In conclusion, the students are in fact aware of the importance of water and, as a result, how important it is to preserve it for the following generations.

**Keywords:** Water Footprint, Students, Water, Consumption, Sustainability.

## **INFECTIONS ASSOCIATED WITH HEALTH CARE – GOOD HABITS OF HAND HYGIENE**

***Carolina Duarte, Joana Albuquerque, Nicole Vidinha***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The infections associated with the health care consist in a health problem, with high costs associated and a high morbid mortality. It's noteworthy that these infections are a public health problem who take an increasingly importance and arise due to the failure of good practice of prevention and control of infections by the professionals, whereby the adoption of certain basic precautions – for example, hand hygiene certainly contributes to reduce the number.

The objectives of this study were to evaluate the good hygienization practices of the professionals working in the health area.

For the preparation of this work a bibliographic review about this theme was carried out and, was applied a questionnaire to professionals of two nursing homes in Viseu and to a hospital of Coimbra.

It was found that only 33% of professionals believe that hand hygiene has a high impact on disease prevention. However all practitioners practice the five moments.

In view of these results, prevention strategies should be implemented to reduce infection rates, such as the training of health professionals; provision of services with more and better resources; among others.

Portugal was the country that presented a higher prevalence of IACS, higher than expected, whereas in recent decades there has been an emergency of the provision of health care, hence has arising a significant number of patients with infections that had previous exposure to health services.

**Keywords:** infections, health care, public health

## PROMOTION OF HEALTHY LIFESTYLES IN COIMBRA

**Ana Santos, Beatriz Soares, Carolina Sabugueiro**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

Health is a state of complete physical, mental and social well-being and not only the absence of affections and infirmities. In Portugal, the Portuguese Network of Healthy Cities, currently has 50 municipalities and “the mission is to support the dissemination, implementation and development of the Healthy Cities Project in municipalities that wish to take health promotion as a priority in the policy-makers”.

In this work, a bibliography research was made about the theme and a questionnaire was applied about the life habits of the students of the city of Coimbra. Were analyzed activities and projects that promote healthy lifestyles, to understand the factors that influence the development of these activities.

Subsequently, was described the dynamics of the "Healthy Night Project", which aims to counteract the increase in the consumption of alcohol and other substances and of sexual relations under its effect, of violence and road accidents among young people will be developed in Coimbra.

In the questionnaire, it was obtained that approximately 21% of respondents do not practice physical activity frequently. However, 28% practice some activity daily. We can also observe that approximately 72% of students never smoke tobacco, but 8.3% are regular smokers and that 34.8% consume alcohol regularly during the week, but 43.2% almost never do.

In conclusion, although there are still strong percentages that show poor living habits, the percentages with respect to good habits are also quite considerable.

**Keywords:** Lifestyles, Determinants of Health, Student Life.

## **MOBILE RADIATION AND PUBLIC HEALTH**

***Carolina Coelho, Marta Batista, Rita Rodrigues***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

Mobile phones are a relatively new technology and have had an exponential development in comparison to other modern technologies. For this reason, scientific studies have not been able to keep up with this evolution and show enough viable data about the impact on the health of its users.

The goal of the paper was to look for answers about the possible consequences in the regular use of the phone and expose our conclusions in a way that we alert the student population of the Polytechnic Institute of Coimbra (PIC).

The methodology applied was the bibliographic research and the application of a questionnaire about the habits of mobile phone usage to a sample of the population in the six schools of the PIC.

Of this study the following results were obtained: fifty six of the inquired have on average, eighteen years old of age, make two to five calls a day, having preference for communication through text messages. Most of the students spend more than three hours on the phone each day and remain constantly close to the device.

It is concluded that there is a lack of research in the area of the short- and long-term impact of mobile phone usage on the daily lives of the population. In spite of this, this article made possible the evaluation of the students' behavior towards the mobile phone, which helped to better understand the importance of the device in the life of a young person.

**Keywords:** Mobile phones, Impact, Health Public, Habits, Students



## **SMOKING, PHYSICAL INACTIVITY AND POOR EATING HABITS**

***Daniela Canas; Isabel Sousa; Nádía Ulisses***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The evolution of society has focused on a world where sedentarism is increasingly common. The technological development allowed us that the activities previously performed, mainly in agriculture and manufacturing work are currently dependent on machines. Thus, the marked decrease in physical activity is now one of the causes of chronic diseases and usually linked to an unbalanced diet.

As it was possible to observe in the study carried out a large part of the student community, it is a practitioner of an unbalanced diet, poor consumption of vegetables, fruits and little water intake. In addition, 16.9% of respondents were smokers and 86.2% lived with them, yet 100% of respondents were aware of the effects of smoking.

Thus, although today's population is informed about health risk factors, they remain immutable and a severe global consequence is predicted.

**Keywords:** Smoking, sedentarism, physical inactivity

## MONOSODIUM GLUTAMATE: THE FLAVOUR THAT TAKES HEALTH?

**A. Duarte, A. Braz, A. Fernandes, A. Morais**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Food additives are intentionally added substances with a technological or organoleptic purpose during the technological process of a food product. Monosodium glutamate is used to enhance the taste and smell of food (umami flavour). With this study we intended to produce a critical analyse to the additive properties, role in food options and toxicological effects in human health.

**METHODS:** The research was based on scientific articles in online platforms like Google Scholar and PubMed, since 2007, using the keywords monosodium glutamate, food additive and toxicity.

**RESULTS:** MSG is the sodium salt of a non-essential amino acid found in nature. After ingestion, it is absorbed by the gastrointestinal tract cells. Most of the glutamate present in food is metabolized by the first-pass effect and is used as energy. What isn't metabolized enters the hepatic portal circulation and is metabolized in the liver, generating energy or being converted into urea for excretion in urine. When in contact with disodium salts or guanylate, the product has an effect 6 times higher than expected. Monosodium glutamate is applied to specific food products like soups, seasonings, snacks, meat and milk products.

**DISCUSSION AND CONCLUSION:** Although it's a food additive that may present negative effects in human health when consumed in high doses, it becomes safe when the established recommendations comply. MSG is not recommended for pregnant women and children under one year old.

In conclusion, since there are so many contradictions, it should exist legislation where the limit value for monosodium glutamate would be established.

**Keywords:** Monosodium glutamate, food additive, toxicity, umami

## NITROSAMINES

**Ana Monteiro, Ana Soares, Maria Ávila, Raquel Martins, Rita Santiago**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Nitrosamines (H<sub>2</sub>N<sub>2</sub>O) are aliphatic or aromatic N-nitroso compounds which have a nitrous functional group attached to a nitrogen atom. They are associated with acute toxicity, mutagenic, teratogenic, carcinogenic and organ-specific action.

**AIM:** Enhance the nitrosamines toxicity, as well as their presence in foods, and compare with the legal limits established by the legislation in force.

**MATERIAL & METHODS:** The keywords "Nitrosamines", "NitrosaminesToxicity" and "Nitrosamines and Cancer" were searched in Scholar Google, Pubmed and ScienceDirect databases, and articles were selected between 1987 and 2018, as well as the digital manual "Diet, Nutrition and Cancer: A Critical Evaluation"(Chapter 9, Volume II).

**RESULTS:** Exposure to nitrosamines occurs either endogenously or exogenously. These compounds are rapidly absorbed into the gastrointestinal tract or through the skin, however most is formed in vivo after ingestion of their precursors. About 5% of the ingested nitrate is reduced to nitrite in saliva. Nitrite reacts with amines and nitrosation occurs. This reaction is favored by acidic pH of the stomach. Nitrosamines require metabolic activation to exert their carcinogenic action. It's estimated that the tolerable exposure level for humans is 5-10 micrograms/kg-1 (ppb) of body weight.

**CONCLUSION:** Further studies are required to evaluate its presence in food. In addition, it's also necessary to set a limit to its use in Portugal because there are no records of the amount of nitrosamines allowed in food. The values used as reference belong to other countries however, there is no guarantee of safety due to the food diversity between countries.

**Keywords:** Nitrosamines, Food, Toxicity.

## **E 950: ACESULFAME-K**

***A. Baptista, A. Martins, M. Duarte***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** High-intensity sweeteners (HIS) are used to sweeten and enhance the flavor. As they are much sweeter than table sugar, smaller amounts of HIS are needed to achieve the same level of sweetness in food.

Only six high-intensity sweeteners are FDA-approved as food additives: saccharin, aspartame, acesulfame potassium, sucralose, neotame, and advantame.

**AIM:** Our aim is to identify the benefits and malfunction of acesulfame-K and possible therapeutic purposes, as well identify their presence in food in relation to the current legislation.

**MATERIAL & METHODS:** We based our research on scientific articles using the search engines of google, pubmed, pubchem and scielo and was analysed articles since 2013.

**RESULTS:** Acesulfame-K is authorized in the EU for food use with exception for foods for young children. Is typically used in frozen desserts, candies, beverages, and baked goods. It's about 200 times sweeter than sugar and is often combined with other sweeteners.

It enters the organism by oral intake, is absorbed in the in small intestine. It's primarily excreted by the urinary system and secondly by the feces with the same composition as it was ingested, because isn't metabolized.

This sweetener was re-evaluated by the European Union Scientific Committee on Food in 2000 who confirmed an ADI of 9 mg/kg.

**CONCLUSION:** In conclusion, although being consumed in less quantity than sucrose, both cases can lead to obesity and other health problems. Although, the fact that the maximum dose recommended of Ace-K is legislated is as advantage, helping to control it's ingestion, however an excessive consumption should be unavoidable.

**Keywords:** Food additive; artificial sweeteners; acesulfame potassium; E950; pharmacokinetics

## RESVERATROL: OUR NEW PROTECTIVE SHIELD?

***Adriana Loureiro; Beatriz Curado; Cristiana Lopes; Margarida Sá Marta***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Background:** Resveratrol(3,4',5 trihydroxy-trans-stilbene) is a non-flavonoid polyphenol compound found in diet, mainly in black grapes red wine and peanuts.

**Aim:** Understand the toxicological process of resveratrol.

**Material and methods:** To gather information, Mendeley®, Pubmed® and Scielo® databases were consulted based in articles published since 2005 which studied oral resveratrol administration.

**Results:** Resveratrol regulates cell proteins for the cell survival, signaling them to defend themselves from an aggression. Regulation mechanisms studies aren't conclusive, but it speculates that cell proteins can repair DNA damage or interfere on cell death process. There is interindividual variability in the metabolism of resveratrol. Despite its high absorption, it presents low bioavailability, once it suffers first pass metabolism, eliminating a large part of its metabolites, glycosides and sulphates, through feces and urine.2-30% gets accumulated in the lipophilic tissue.

Due to antioxidant properties, resveratrol has anti aging properties and an important role in cardiovascular diseases prevention, inhibits platelet aggregation, and increases the nitric oxide production, which is a vasodilator. It also has anti inflammatory, anti cancerous, antiviral, estrogenic properties; it prevents obesity, insulin resistance and degenerative diseases and promotes metabolic homeostasis and mitochondrial function, helping to extend life.

On the other hand, when ingested in quantities higher than 5g/day, during long periods of time, appear digestive problems, abdominal pain, nausea, diarrhea and flatulence. However, limit values of resveratrol present in food aren't yet legally stipulated.

**Conclusion:** There's the need of further studies to better understanding the metabolism and effects of resveratrol in long term and high-doses use.

**Keywords:** Resveratrol, metabolism, toxicity an benefits.

## **SAXITOXINS IN BIVALVES: THE DAMAGES TO HUMAN HEALTH**

***M. Ângelo, M. Marques, D. Pires, M. Santos, M.Silva***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Background: Marine biotoxins are synthesized by toxic microalgae that contaminate marine resources. The ingestion of marine organisms or water contaminated may cause a paralytic shellfish poisoning.

AIM: Through literary review we pretend to: understand the toxicological process; identify which foods are susceptible, the damages to human health, preventive measures and maximum allowed values.

Material & Methods: Literature review (2011-2018) was conducted using databases ScienceDirect, Pubchem and Directory of Open Access Journals, employing as key-words "Marine Biotoxins" and "Saxitoxins".

Results: There is a rapid onset of symptoms due to the local absorption of toxins through the mucous membranes of the mouth, resulting from the ingestion of bivalves that accumulate the toxins. It causes inhibition of the propagation of nerve impulses, after connection to the peripheral nervous system. The toxin responsible is the saxitoxin. The positive charge of the guanidine group interacts with carboxyl group of the P loop, causing blockage of the passage of ion Na<sup>+</sup>. The preventive measures are avoiding ingestion of seafood from places where there is a high concentration or growth of algae; local authorities should monitor the growth of dinoflagellates and forbid fishing in periods of risk; epidemiological and sanitary surveillance.

Discussion: According to law terms, there are maximum limits of these toxins in bivalves – it is forbidden to exceed 80 µg/100g (total paralyzing toxins). According to World Health Organization, LD50 of saxitoxin (oral) corresponds to 260-263 µg/Kg; therefore, humans mustn't exceed 325g of bivalves. In conclusion, it may be safe to consume this type of products, if every preventive measures are respected.

**Keywords:** Biologic contamination, Marine biotoxins, Paralytic Shellfish Poisoning, Saxitoxins.

## **ASPARTAME: AN HARMLESS SWEETENER OR A POISON TO HEALTH?**

***S. Frasco, R. Lucas, M. Magalhães, P. Mendes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Aspartame is a food additive, used as an artificial sweetener, consisting of two non-essential amino acids: aspartic acid and phenylalanine. Phenylalanine is slightly modified with the addition of a methyl group, conferring the sweet taste characteristic of aspartame.

**AIM:** Realize the toxicity levels that this substance can reach, its mechanism of action in the human body, as well as the damages and benefits that result from the ingestion.

**MATERIAL & METHODS:** Literature review using EFSA's legislation and the ScienceDirect database with keywords: "aspartame", "aspartame effects" and "aspartame intake". The articles were selected after reading the title and abstract, and among them there were meta-analyses and experimental studies.

**RESULTS:** In the intestine, aspartame is fully digested, with the absorption of the two amino acids and methanol, released by the methyl group of the modified phenylalanine, to produce energy. Any effect that may occur results from the action of aspartame components. There is little evidence that this sweetener is carcinogenic and causes brain damage or behavioral effects when the exposure is below to the ADI (40mg/kg body weight). Its consumption is considered safe for the population, however patients with phenylketonuria need more care, because the harmful increase of the phenylalanine levels in their organism. Even when there are higher intakes, no adverse effects are observed.

**CONCLUSION:** The toxicity level of aspartame is difficult to reach, considering what is fully digested. Thus, despite controversy, most studies show that there is no evidence of harm to humans.

**Keywords:** "Aspartame", "Aspartame effects", "Aspartame intake"

## TARTRAZINE IN CHILDREN'S DIET

***Inês Neto, Mariana Serra, Núria Coelho, Sofia Almeida***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Tartrazine (E102) is a synthetic dye, soluble in water, that produces a lemon-yellow color. It's used in sodas, treats and gelatine, being acceptable the daily intake of  $\leq 10$  mg/kg for the general population. This dye is absorbed, metabolized by the gastrointestinal microflora, resulting in sulphanic acid and aminopyrazalone, and excreted by urine and bile.

It was conducted a research on ScienceDirect, Pubmed and Pubchem databases using the keywords: "tartrazine", "food", "dye", "children". It was limited to articles in English between 2012 and 2017.

The aim of this work is to investigate the toxicity and the consumption of tartrazine in children, due to the greater exposure of this population to foods containing it.

Estimates of dietary exposures to tartrazine for European children aged 1–10 years old ranged between 0.2 and 1.9 mg/kg per day. There's also been reported a possible relationship between hyperactivity in children and consumption of beverages containing tartrazine in cases of prolonged/cronic exposure.

In 2014 about 52% of Portuguese children up to 4 years old, one of the "more vulnerable" groups to "distortion of food standards", drink sodas and nectars every day.

Dietary exposure estimated for children aged 1-10 years old is below the upper bound of the acceptable daily intake (ADI) and studies concluded that dietary exposure to tartrazine for the general population, including children, does not represent a health concern when consumed within the legislated values.

**Keywords:** Tartrazine; Toxicity; Children; Food; Additives



## AN ORANGE RHIZOME THAT CAN HELP YOU TO HEAL

***Diana Filipe, Jéssica Quintas, Marisa Geraldes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Natural products have been used throughout human history for various purposes. Curcuma longa, an orange-colored plant of the ginger family, usually used in Ayurvedic medicine to prevent diseases, has a compound called curcumin (2-5%). Many of its therapeutic effects have been confirmed by modern scientific research, that highlighted its anti-carcinogenic and chemopreventive properties.

Aim: Understand the benefits of curcumin, its application to health, as well as define the safety profile of its consumption and bioavailability; specifically link your consumption to cancer prevention and treatment.

Methods: Several articles and systematic reviews were searched through the keywords "curcuma", "cancer", "pharmacokinetics", and "mechanism of action", using articles from 2008 through Pubmed®, Google Scholar® databases.

Results: The anticancer effects of curcumin are predominantly mediated through its downregulation of various transcription factors, growth factors, inflammatory cytokines, protein kinases and other oncogenic molecules. Its bioavailability is low, benefiting its use together with other substances in order to enhance its action and increase its availability. At least a daily dose of 1.6 g of curcumin is required to be effective. Substance intake is safe and well tolerated, and no toxicity has been observed in both humans and animals, even at high doses (12g / day).

Conclusion: Despite the low bioavailability and high affinity for plasma proteins, curcumin can suppress the tumorigenic activity of a wide variety of carcinomas (as colon, esophagus, stomach, liver, breast, leukemia, prostate). Curcumin is an important component for the diet, or as a supplement for the treatment and prevention of cancer.

**Keywords:** Curcuma longa; Curcumin; cancer; prevention; treatment; anticarcinogenic.

## **TANNINS IN WINE – HAVE THEY ANY INFLUENCE?**

**Ana Vitória, Catarina Rocha, Filipa Alves, Sara Miranda**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**BACKGROUND:** Tannins are present in cereals, cocoa, fruits and vegetables, leguminous plants and drinks. Tannins are phenolic compounds constituted by simple carbohydrates, hydroxycolloidal gums, phenols and aminoacids and are divide in hydrolyzed and condensed. The use of enological tannins may have some disadvantages, as the uncertainty of their benefit in the quality of wine, due to different chemical structure, addition time, dosage, purity and reaction velocity of this tannins. On the other hand the advantages are based on the diverse chemical, biological (antioxidant, anticancer and anti-inflammatory) and sensorial properties.

**AIM:** Understanding the metabolism and tannins action in wine.

**MATERIAL & METHODS:** A literature review was performed in Google Scholar and SciELO databases. Nine articles were found and of these, 5 were selected for analysis. Research was made for articles between 2005 and 2017.

**RESULTS:** In wine, tannins are responsible for the color and adstringency. Tannins addition is sometimes an enology practice to improve the organoleptic characteristics of wine and the his clarification process, which is one of the stages of wine production, where filtration is made to provide clarity. The condensed tannins can take preventive action indiseases such Alzheimer. On the other hand, they have ability to precipitate proteins which leads to a reduction of digestibility. There are no limit values in legislation for tannins addition in wine production.

**CONCLUSION:** Tannins are naturally present in wine and this presence influence the wine quality in terms of color, astringency and bitter taste. The addition of synthetic tannins shows benefits to wine composition, however this fact needed further investigation.

**Keywords:** Tanins, wine

## PRESENCE OF CYANOBACTERIA IN WATERS FOR HUMAN CONSUMPTION IN PORTUGAL

**Ana Mafalda Gonçalves; Carolina Teixeira; José Batista**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

Cyanobacteria, also ordinarily known as blue algae produce toxins, which in large numbers have a significant environmental impact, including disease or even mortality. The main objective of this work is to make known to the population the existence of cyanobacteria and their potential risks, for living beings and for public health. Pointing at the theoretical basis of this work, a bibliographical review of scientific articles as well as the visualization, reading and analysis of news was carried out aiming at a consistent view of the panorama of Portugal on the subject under study. It was verified that the development of cyanobacteria came from several circumstances, in the case of Amarante, it was evident, the existence of a untreated water, in the other hand, in the Municipality of Moura the lack of flow and the high temperatures constituted favorable factors to the formation of those blue algae. In this way the treatment and monitoring of the waters in those rivers is different, because in the Tâmega river in Amarante, there is a lack of surveillance that could lead to a great development of the bacterium, while in the Ardila river in the Municipality of Moura, the technicians were able to detect the presence of cyanobacteria before they reached the sources of the water abstraction system. After sampling for analysis, there are several parameters in which the technicians should have a bigger precaution, being these physical-chemical, biological and toxic. It is concluded that control and surveillance are the activities of supreme importance for combating the spread of cyanobacteria, as well as the periodic monitoring of public spaces. Likewise, it is essential that there be training actions of the professionals, aiming to increase their skills and advances in the reaction and action to the presence of cyanobacteria.

**Keywords:** Water; Cyanobacteria; Public health; Surveillance

## **BATHING AREAS AND WATER QUALITY**

***Adriana Felizardo, Mariana Martins, Roberta Alexandra***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The bathing waters are surface waters, whether they are interior, coastal or transitional, as defined in the Water Law (Law nº 58/2005, 29th of december), in which is expected a large number of bathers and where the bathing isn't permanently interdicted or discouraged( that is, at least during a complete bathing season).

To ensure the safety of waters identified as bathing waters some requirements are needed not only for the accesses, infrastructures and safety of the beaches, but also for the quality of the water. The quality of bathing water represents not only a health factor but also an important indicator of environmental quality and tourism development.

With this study it was pretended to evaluate the good practices of using bathing areas. The methodology applied in addition to the bibliographic review on the subject, it was applied a questionnaire to the population.

In the analysis of the survey of 26 individuals, 80.8% stated that they knew / attended beaches with the Blue Flag. Regarding good practice in bathing areas, 57.7% answered "do not leave waste on the beach", 26.9% didn't knew examples of good practices, 7.7% answered "put the waste in appropriate places" and 7.7% "do not leave waste at the sea". As for the requirements to have a Blue Flag in a beach, 42.3% answered "clean beach"; 21% answered "good water quality"; 15.4% answered that they didn't knew; 11.5% "hygiene" and 7.7% "vigilance".

Although the subject matter is recognized by a significant number of the population, there is a need for more awareness-raising in order to increase knowledge of good practice in bathing areas so that there is a balance between water quality and health of the population that is enjoying these areas.

**Keywords:** bathing waters, water quality, health factor, quality indicator

## LEVEL OF KNOWLEDGE AND GOOD PRACTICES AGAINST *LEGIONELLA*

***Inês Caseiro, Inês Ferreira, Rúben Ferreira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The *Legionella's* bacterium is an omnipresent microorganism in aquatic environment that can exist in natural tanks, rivers and lakes and also in artificial tanks like domestic water circuits, humidifiers, cooling towers, jacuzzis, swimming pools, thermal facilities, dirty standing waters and decorative fountains, in other words, places where we can produce aerosols with facility.

This study's goal was to investigate the level of knowledge about *Legionella* and raise population awareness with good practices. To achieve this goal, we made a bibliographic revision about this concern and applied an inquiry to the population, made by the investigation team.

It was found that 90.6% of the population has a good notion of the *Legionella's* definition. It was also found that 86.5% know the main way of this disease transmission, 78.1% know the transmission sources of that disease, 59.4% know the precautions to take and that 89.6% opt for good practices.

We may conclude that the population majority (85.1%) has a level of knowledge about this disease. Bearing in mind its importance in public health, it is essential that the population know some good practices which help to fight that illness, such as, the shower's head disinfection, the thermal accumulator's temperature regulation and avoid drinking water directly from the tap because the water droplets can be inhaled.

**Keywords:** Bacterium, *Legionella*, Aquatic Environment, Aerosols, Public Health

## **RISK MANAGEMENT IN PUBLIC POOLS AND THE PRIMARY HEALTH CARE**

***Diana Fernandes, Sara Rodrigues***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The swimming pools are used daily for recreational and leisure activities, curricular, training, sports and therapeutic, which requires conditions of safety, hygiene and health for both regulars and public swimming pool workers.

To carry out this study, a bibliographic research was carried out on the subject and a questionnaire was applied to the users and employees of the swimming pools of S. Martinho do Bispo.

The following results were obtained in relation to the 8 employees who were part of the sample; it was found that in the use of protective materials, such as slippers, only 87.5% of employees wear slippers when they move to the tank. As for the disinfection of the equipment only 50% disinfects the materials and the installations. And 62.5% assume to be at risk behavior, which can harm the remaining users and about 100% would recommend the facilities to their relatives and friends

The following results were obtained for users in a sample of 18 individuals, there was a deficient use of the facilities, only 55.5% of the users bathe before entering the tank, with 100% using the lava feet. 33.33% of users are not careful to remove make-up or some type of body cream before entering the tank, and 94.4% are concerned about not going to the pool when they have a health problem.

Some measures, such as the obligation to shower in advance and the passage of users by suitable foot-washing, should be current practice of the rules for the use of these facilities.

**Keywords:** Pools, health, contamination, water

## **WASTEWATER-TREATMENT TYPES IN PORTUGAL**

***Andreia Videira, Beatriz Grilo, Mónica Almeida***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

In today's societies sustainable water management associated with environmental protection and public health is a permanent concern. Waste water means waters which, after human use, have their natural characteristics changed. WWTPs are the most appropriate destination for the promotion of public health and for the preservation of water resources in order to avoid their contamination and aim at the final treatment of the wastewater produced by the populations.

The objectives of this work are to clarify the various types of treatment that exist in the WWTP in Portugal and for this the methodology used was a bibliographical review on the subject.

It has been found that there are several types of WWTP. The Espinho WWTP has solid and liquid phase treatments. At the level of the liquid phase, it performs secondary treatment, consisting of preliminary treatment, primary sedimentation, biological treatment and secondary sedimentation. The Mértola WWTP has a dedicated line for complementary treatment of treated effluent with a view to its reuse for service water.

The WWTP of Vilamoura contemplates primary, secondary, tertiary treatment and also the treatment of activated sludge.

In Madeira, Machico WWTP contemplates primary and secondary treatment. And the treatment of the gas phase.

It is concluded that WWTPs are an added value in the treatment of wastewater both from an environmental point of view, since they can return to the environment without harming it as Public Health, namely in controlling the spread of diseases and epidemics.

**Keywords:** Residual waters; WWTP; Treatment types; Portugal

## **WATER QUALITY IN AQUATIC PARKS**

***António Gomes; Leonardo Pereira; Miguel Pinto; Rúben Cruz***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The arrival of summer always brings a high adhesion to aquatic amusement parks, this causes there is prior and during, a safety and hygiene action at these sites in order to avoid and reduce the dangers that can occur. We check the importance given by the people to safety and hygiene measures in amusement parks and show people how the technician of health covers the safety and hygiene of water for recreational purposes, community outreach for the good hygiene-sanitary use in amusement parks. To obtain results do a survey with questions relating to safety and hygiene in amusement parks. And perform a raising action to good use at the level of hygiene in amusement parks.

28 people were polled users of water parks. The results that we obtained were: the first question 83% of people surveyed replied that he did not know how is a collection of surface water or in depth. In the second question, 29% of respondents replied that it does not use CAP and slippers. In the third issue, 15% replied that it does not usually pass the body by water before and/or after entering the aquatic park. In relation to the fourth question, 93% answered that it usually does not refer to the parameters of the pool before entering. Finally in the fifth issue, 100% responded that it complies with the standards for hygiene and safety. People comply with the standards for hygiene and safety in amusement parks, what causes people to prevent the risks.

After obtaining the results of the respondents, it was found that most people surveyed, are aware of the dangers associated with aquatic amusement parks and such, act in order to prevent any accident occurs, thus reducing the risk.

**Keywords:** Aquatic amusement parks; safety; awareness



## **DEVELOPMENT OF CYANOBACTERIA AS A CONSEQUENCE OF CLIMATE CHANGE - CASE STUDY**

***Gonçalo Oliveira, Mariana Pagaimo, Verónica Teixeira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The Cyanobacterias (or blue seaweed) are organisms that develop in superficial selfless waters and or sea. These release toxins in the water, changing their composition causing public and animal health problems. The factors such as the rise of temperature and combination of unfavourable nutrients, leading to mass proliferation of Cyanobacterias.

The main purpose of this paper was to relate the appearance and development of the Cyanobacterias with climate changes and evaluate the level of knowledge of the population towards this topic, in the Alentejana area of Portugal. It was conducted a bibliographic revision of articles and applied an survey to the locals in the area of study.

Through the collected data we concluded that there was a heat wave in the summer of 2005, there for a significant rise of the appearance of florescente, being a consequent of Cyanobacterias growth in this specific time (861,56). The data obtain from the 57 survey's taken, we observed that the mayoralty (52,6%) of the inquired had knowledge of how the climate changes influenced these organisms. So the correlation of the area Montemor-o-novo (45,6%) and the knowledge of public health conducted towards this subject. In conclusion the participants present levels of high knowledge, having in account that they find them selves in an area that such occurrences happen. Affirming in this way that there is a logical connection between the development of Cyanobacterias and the climate changes.

**Keywords:** Cyanobacterias, climate changes, population, Public Health

## THE INFLUENCE OF NUTRITIONAL THERAPY ON GESTATIONAL DIABETES

**Eduarda Almeida; Sandra Faria**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

**Introduction:** Gestational Diabetes is defined as a glucose intolerance of varying intensity that was started and first diagnosed during pregnancy. The prevalence has increased considerably, being the nutritional therapy indispensable for the treatment and control of this pathology.

**Purpose:** To assess the efficacy of nutritional intervention and to evaluate whether the high Preconception Body Mass Index (BMI) is a risk factor to be taken into account.

**Materials and methods:** We conducted a retrospective observational analytical study in which the data were collected through individual clinical processes. Included in this study were 32 pregnant women who presented with a diagnosis of GD during pregnancy, nutrition consultation support at the beginning of treatment, frequency in multidisciplinary consultations of GD, and women between the ages of 18 and 45 years. The data were analyzed in SPSS version 21.0.

**Results:** Of the 32 pregnant women analyzed, they had an average age of  $33.5 \pm 6.5$  years. It was verified that 71.9% had a BMI  $<30.0$  kg/m<sup>2</sup>. The weight gain for pregnant women with diet therapy was  $12.2 \pm 5.2$  kg, whereas in pregnant women with TN and insulin therapy it was  $8.7 \pm 4.5$  kg, showing no significant difference in relation to treatment and Weight gain ( $p > 0.05$ ).

**Conclusions:** Surveillance in pregnant women diagnosed with GD is important, since it will influence not only the course of pregnancy but also the postpartum period. Nutritional therapy is the first line of treatment and essential for better metabolic control.

**Keywords:** Gestational Diabetes, BMI, Nutrition Therapy, Pregnancy

## LITERACY AND SUGAR-SWEETENED BEVERAGES CONSUMPTION AMONG HIGH SCHOOL STUDENTS

**Daniela Carvalho**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

The increase of sugar-sweetened beverage consumption in adolescence is a risk factor for overweight and obesity and, consequently, a predictor of health status as adult. Food literacy represents cognitive and social skills that determine a motivation and ability, record and use information in order to consciously discern, promote, maintain and make nutritionally favorable choices.

The objective of this study is to evaluate the sugar-sweetened beverage consumption and the literacy of secondary school students from EB 2,3 / S Dr. Daniel de Matos.

The present analytical study corresponds to a transversal observational design that evaluated 105 students, 57 of the female gender and 48 of the male gender, through the application of consumption and nutritional literacy survey.

A statistically significant association was found between energy drink consumption and gender ( $p = 0.048$ ). The father's education level had a significant association with the nutritional literacy index of the respondents ( $p = 0.039$ ). In opposition, no statistical association was found between sugar-sweetened beverage consumption and the literacy index.

According to the results, to reduce sugar-sweetened beverage consumption and on the other hand to improve the rate of literacy in adolescents, more attention should be given to the adolescents nutritional education and their parents.

**Keywords:** Sugar-sweetened beverage, health literacy, adolescents

## **FEEDING HABITS AND PREVALENCE OF PRE-OBESITY AND OBESITY IN ADULTS WITH MENTAL DEFICIENCY**

***Renata Brum, Laura Silva***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Obesity is one of the major public health problems of the 21st century. The prevalence of this chronic pathology is high in individuals with mental retardation due to genetic factors such as a decrease in basal metabolic rate, a high use of medications, but also a sedentary lifestyle and inadequate food intake.

Objective: To identify eating habits and the prevalence of pre-obesity and obesity in adults with mental disabilities.

Material and Methods: The analysis of the target population was based on a cross-sectional observational study. The food frequency questionnaire was applied to mentally disabled adults, aged between 18 and 65, institutionalized in four social centers in the North of the country.

RESULTS: Of the 106 mentally retarded women who participated in the study, 48 were female and 58 were male. From the anthropometric evaluation, it is verified that the majority of the total sample, 35.0% (n = 36), presents a BMI that indicates "Normal Weight". No statistically significant relationship was found between gender and the prevalence of overweight and obesity; Down Syndrome and the prevalence of pre-obesity and obesity.

Conclusions: the results show that 63.2% of the study participants presented pre-obesity and obesity. These were superior in the feminine gender (except obesity grade I) and Intellectual Deficiency not associated with other mental deficiencies. Regarding dietary habits, there was a greater adequacy in the internal regime.

**Keywords:** mental disability; pre-obesity; obesity; eating habits

## **GYM PRACTICE: RELATIONSHIP BETWEEN LEVEL OF INTEREST FOR HEALTHY FOOD AND PERSONAL TRAINING OBJECTIVES**

***Filipa Oliveira; Sara Barbosa***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Introduction: Nutrition allied to sports is an area of great interest and has been increasingly valued, being sports nutrition considered as a key to ensure an athletic performance quality. Therefore, nutrition and sports are terms that are increasingly interconnected and should be noted that healthy eating is essential for the athlete at all training times. It should also be taken into account proper hydration and a balanced nutrients intake. A good nutritional guidance provides an appropriate distribution of nutrients, being essential to ensure that athletes train more effectively, reducing the risk of injury.

Purpose: The study's main objective was to evaluate, through questionnaires, the relationship between the level of interest on nutrition and workout goals in the gym practitioners.

Materials and methods: Questionnaires were applied to the gym practitioners about their eating habits in specific training time. The data collected were analyzed using the statistical software Statistic Package Social Sciences, SPSS 21.0.

Results: No relationship was assessed between the level of interest for food and the personal workout goals. Likewise, the interest revealed was not proportional in terms of nutritional quality.

Conclusion: There was no relationship between the level of interest in healthy eating and personal training goals. However, most athletes consider that is appropriate to have a follow-up by a nutritionist to achieve the desired goal.

**Keywords:** Sports Nutrition; athletes; energy intake

## THE STRESS INFLUENCE ON THE DEVELOPMENT OF EATING DISORDERS IN UNIVERSITY STUDENTS

***Aleida Lima, Ana Rita Ribeiro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

Stress is a response of physiological adaptation of the individual to changes in the internal / external environment, which can be manifested in different ways from individual to individual, taking into account the perception of a factor as a stress inducer. This condition can trigger a change in the individual's eating behavior, which can be termed an eating disorder. The objective of this study is check whether stress influences the development of eating disorders. We evaluated 255 students aged between 18 and 40 years. The study was divided into two phases (1st phase n = 167 and 2nd phase n = 85). Data were collected through the application of a self-completion questionnaire. Statistical analysis of the data was performed using the Qui-square tests of Independence and the Mecnemar test using SPSS Statiscs software. In the statistical analysis of the data, it was verified that 66.7% of the individuals presented a high level of stress. In conclusion, food plays a fundamental role in the individual's life that goes beyond the nutritional dimension. In the presence of stress and with a view to combating it, food is often used not to supply physiological and nutritional needs, but in search of psychological comfort and as a deliberate strategy to modify temperament and mood. With this study we conclude that stress is an inducing factor in the development of eating disorders.

**Keywords:** Stress; Stress Scale Perceived PSS-10; Eating Disorders

## **PREVALENCE OF RISK FACTORS FOR HYPERTENSION IN ADULT PATIENTS ATTENDING THE OUTPATIENT CLINICS OF THE UNIVERSITY HOSPITAL OF THE ALGARVE**

***Fabiana Duarte (1); M. Clara Rocha (1); Paula Alves (2); Luísa Geda (2)***

*(1) Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Coimbra, Portugal;*

*(2) Centro Hospitalar Universitário do Algarve, Portimão, Portugal*

Introduction: Arterial hypertension (HTN) is the most prevalent and important risk factor for the development of cardiovascular diseases (CVD) [1,2]. Therefore, the identification of risk factors for the development of HTN is essential to ensure a targeted and effective intervention [3].

Purpose: To determine the prevalence of risk factors for HTN and the association between these factors in adults patients, as well as to determine the relationship between the prevalence of HTN and each risk factor considered.

Materials and methods: This was a cross-sectional study in a non-randomized sample of adult patients of both sexes who attend the external consultations of nutrition of the Portimão Unit – Centro Hospitalar Universitário do Algarve. Information on habits and diabetes mellitus (DM) and HTN diagnosis was obtained through the indirect administration of a structured questionnaire. We also evaluated the anthropometric parameters (height, weight and waist circumference (WC)).

Results: The study included 62 patients (59,7% female and 40,3% male), whose hypertensive and normotensive individuals had an average age of  $59,4 \pm 11,0$  and  $51,0 \pm 16,0$  years, respectively. The prevalence of HTN was 54,8%, higher in female (56,8 versus 52,0%,  $p > 0,05$ ). Physical inactivity, smoking, alcoholism, DM and poor adherence to the mediterranean diet were not significantly associated with prevalence of HTN.

Conclusions: The prevalence of HTN in the sample studied was high. From the evaluated factors, only body mass index (BMI) and WC were significantly associated with prevalence of HTN.

**Keywords:** Arterial hypertension, risk factors, mediterranean diet

## FOOD QUALITY OF THE DINING ROOMS OF THE HOSPITAL SANTA MARIA MAIOR, EPE

***Adriana Sousa, Isabel Fernandes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Dietética e Nutrição, Coimbra, Portugal*

The Collective Meals play a key role in providing meals, as they may be the only place to offer a nutritionally balanced service. In this way, it becomes important to know and control the quality of the menus of these units, as well as the existing food waste.

The objective of this study is to evaluate the quality of menus of the Hospital Canteen, as well as the determination of the food waste occurred.

The study was conducted from February 6 to March 5 of 2017 and used as an instrument of analysis the Method of Qualitative Evaluation of Menus, where were evaluated 112 meals. The results revealed an "Acceptable" evaluation, however, it was possible to verify a low variability in 80% of the lunch plates and in 95% of the dinner plates and a incorporation of legumes as a complement in only 20% of the meals.

The determination of the Food Waste was obtained by weighing the constituents of the Lunch Dishes (the Dinner did not present significant expression that justifies its analysis) accounting for the Remains and Remains obtained. It was possible to verify that Remains presented acceptable values, in 84% of the meals, while the Remains presented a value 10 times higher than expected. These results revealed a set of improvement needs, both for the menus and for the technical data sheets, which allow reducing food waste. In this way, it is fundamental to reformulate the Menu Plan, resulting in better offerings, and consequently better acceptance by the users, which may be essential in reduction Waste, which translates into increased service efficiency.

**Keywords:** Qualitative Evaluation; Food Waste; Menus; Canteen



## THE INTERVENTION OF THE AUDIOLOGIST IN UNILATERAL HEARING LOSS

**Ana Rodrigues; Andreia Gouveia; Ângela Marques; Inês Tavares; Joana Fernandes; Margarida Teixeira.**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiology, Coimbra, Portugal*

**Introduction:** Unilateral hearing loss is characterized by decreased hearing in only one ear. People with unilateral hearing loss have difficulties in understanding speech in noise due to reduced binaural benefit, since normal hearing in both ears helps detect and organize speech in noise. **Objective:** Based on a review of the literature, we intend to understand the possible interventions / solutions of an Audiologist in a unilateral hearing loss, be it conduction, mixed or sensorineural, regardless of its type and degree. **Method:** As search engines, we used Google Scholar and the following keywords: "unilateral hearing loss", "cochlear implant", "BAHA system" and "electroacoustic hearing aids", obtaining a total of 6 articles for analysis. **Results:** In the face of unilateral hearing loss, the audiologist may recommend: a CROSS system (indicated for people with loss of conduction or sensorineural), a BAHA system (which can treat conductive hearing loss, mixed hearing loss and unilateral sensorineural deafness), Implant cochlear (indicated for severe and profound losses) and also an electroacoustic hearing aid (indicated for people with all types of hearing loss). Although the cochlear implant is used as a solution for unilateral loss, this is only advised in cases where hearing aids are not obtained gain, being these the first option. **Conclusion:** Although it is a topic where there is still much research, the audiologist can advise several rehabilitation alternatives to a person with unilateral hearing loss that will depend on several factors such as audiological, economic, lifestyle or even the aesthetic issues.

**Keywords:** unilateral hearing loss, cochlear implant, BAHA system and electroacoustic hearing aids.

## AURAL REHABILITATION IN CHILDREN WITH USHER SYNDROME

**Ana Catarina Travassos, André Temócio, Catarina Carneiro, Joana Dias, Joana Fernandes**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiology, Coimbra, Portugal*

**Introduction:** Usher syndrome is a genetic disease that associates hearing loss with the gradual loss of vision. In cases where it is not possible to resort to any medical-surgical treatment, it is possible, through auditory rehabilitation, to improve hearing through electroacoustic devices, such as hearing aids and cochlear implants. **Objective:** Through a review of the literature, identify, describe and analyze scientific articles on hearing loss in children with Usher syndrome. **Methodology:** The research methods used were based on different databases, such as Google Scholar and Pubmed, using as search engines the words "Usher syndrome", "aural rehabilitation", obtaining a total of 7 articles. **Results:** The hearing loss, in this syndrome, is bilateral and severe sensorineural hearing loss, as result of a genetic mutation that affects the nerve cells of the cochlea and the organ of the inner ear. To minimize hearing damage from this syndrome, cochlear implants or hearing aids can be used to improve language and communication development. Sometimes it's difficult to have a correct aural rehabilitation in these children because vision is also affected. **Conclusion:** Patients with Usher Syndrome should have professional follow-up as early as possible. It is concluded that depending on the type of Usher Syndrome and associated hearing loss, the most suitable hearing aid is Behind the Ear (BTE), since the ear is constantly growing, but also by the degree of hearing loss and by this be progressive.

**Keywords:** Hearing, Usher syndrome, sensorineural hearing loss, auditory rehabilitation

## **THE BENEFIT OF THE RELATIONSHIP BETWEEN THE COCHLEAR IMPLANT AND MODULAR SYSTEM**

***Patrícia Sá, Carlos Mateus, Luísa Maia, Leonardo Costa***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: After the confirmed diagnosis of hearing loss, it is necessary to think about (re) habilitation of the patient, give the opportunity to return\begin to interpret and understand the message that is being received. Objective: Based on a systematic review of the literature, we intend to analyze the benefit of the relationship between the cochlear implant with the modular frequency. Methodology: In the b-on website keywords were used such as "cochlear implant" and "FM system", Google was also used to search for articles about active listening. After a selection, we obtained four articles for the elaboration of this work. Results: With the monosyllable test in free field at 65 dB SPL, it appears that most children with cochlear implants obtained more than 50% of correctly repeated words. The same is true for the number of phonemes and the Test of numbers. Regarding the benefit between the implant and the FM system, there was a significant increase in the results of speech perception tests in the presence of noise.

Conclusion: The use of cochlear implant or FM system is extremely effective in the auditory (re) habilitation plans in order to better understand / process the messages that are being transmitted, however, it has also been verified that there is a mutual benefit with the use of cochlear implant and FM system, promoting better comfort and gain on the part of the patient.

**Keywords:** FM System, Cochlear Implant, Deafness

## INNOVATIONS IN COCHLEAR IMPLANTS

***Guilherme Ferreira; João Oliveira; Juliana Pinho; Rui Cardoso***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: In certain cases of severe deafness or deafness the hair cells of the cochlea are so damaged that the stimulation of the auditory pathway by sound or vibration can not ensure an improvement in auditory perception. A Cochlear Implant (CI) is the only medical device capable of replacing this function. It works bypassing nonfunctional inner ear parts and providing electrical stimulation directly to the nerve fibers in the cochlea. An IC system consists of two parts: an external audio processor and an internal cochlear implant. Objectives: Through a systematic review of the literature, we pretended know the various innovations that have arisen in recent years in cochlear implants, which are available in the market to satisfy and improve the quality of life of the deaf individual. Methodology: A bibliographic search was performed in several data bases, such as "Google Scholar" and "PubMed", using keywords such as "cochlear implants", "loss of auditory perception" and "electrical stimulation" after applying the inclusion criteria, some articles were selected to integrate this systematic review of the literature. Results: The evolution / innovation of cochlear implants is extremely important. With innovation over the years, medical intervention was possible in larger numbers of the population. Conclusion: This work concludes an evolution / innovation in cochlear implants. It is an ambitious small intervention in Man with the objective of satisfying and improving the quality of life of the individual with deafness.

**Keywords:** cochlear implants ; electrical simulation ; evolution

## AURAL REHABILITATION IN CHILDREN WITH TREACHER-COLLINS SYNDROME

**André Nunes; Ivone Dias; Daniela Jesus; Ana Correia; Beatriz Gomes**

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: The Treacher-Collins syndrome is a rare disease whose prevalence is 2%. Is characterized by the presence of bilateral malformations of the external and middle ear, that usually are symmetrical. This autosomal dominant inheritance syndrome is due to a mutation in the long arm of chromosome 5. The carriers have conductive hearing loss that can be moderate or severe, caused by changes in the external auditory canal and the ossicular chain. Although conductive hearing loss is the most prevalent one, in this syndrome could appear some cases of mixed hearing loss. Objective: Based on a literature review it is intended to understand the better alternative of auditory (re)habilitation plan/program for children with Treacher-Collins syndrome. Methods: The article search was based on electronic databases such as ScienceDirect, Pubmed, Scielo, B-on and Google scholar was found 15 articles. Results: Cases of malformations or atresia of the external auditory canal often remain without proper hearing rehabilitation, because in some cases there is a low acceptance by the user due to excessive compression on the skin (BAHA percutaneous). Conclusion: The auditory rehabilitation in these children it's fundamental, being that the percutaneous BAHA (Bone -Anchored Hearing Aid) it's used in younger children, once the transcutaneous can't be used because the mastoid isn't yet developed. Due to the atresia of the external auditory canal the adaptation of conventional prostheses, as BTE, is almost impossible, so the only alternative are the bone conduction prostheses, being that the Bone Anchored Hearing Aid (BAHA) percutaneous or transcutaneous are the best option. However, in some cases there is a low acceptance and adaptation by the user to the percutaneous BAHA due to excessive compression on the mastoid.

**Keywords:** Treacher-Collins syndrome; hearing impairment; hearing rehabilitation.

## **SIMULTANEOUS COCHLEAR IMPLANTS VERSUS SUCESSIVE COCHLEAR IMPLANTS IN ADULTS**

***Andreia Garcia; Carolina Rodrigues; Daniela Gomes; Juelma Tavares; Lorrynne Madeira; Silvânia Monteiro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Audiologia, Coimbra, Portugal*

Introduction: The Cochlear Implant stimulates hearing in individuals with profound sensorineural deafness without prosthetic benefit with the use of hearing aids and can be placed unilaterally or bilaterally. The bilateral Cochlear Implant can be implanted simultaneously or sequentially. Objective: Based on the review of the literature we pretend to study the advantages of simultaneous versus sequential implantation in adults aged between 18 and 75 years. Methodologies: A research was performed in books and in databases: B-ON and GOOGLE ACADEMIC with the use of the following keywords: "sequential or simultaneous cochlear implant, implants in adults and (re)habilitation", in English and Portuguese. Considering the following inclusion criteria: articles published in English and Portuguese published between 2003 and 2018 and articles referring to adults aged in the range above. In this research we got a total of 15 articles. Results: The articles demonstrate that when we compare the stimulation time required for the individual to present thresholds close to those of a normal-hearing person, we find a faster recovery in the simultaneous implant than in the sequential implant, at a ratio of 1 month to 3 months. Conclusion: Cochlear Implants allowed a change in the quality of life of individuals with hearing loss, increasing the autonomy and contributing for a better social relationship of these individuals, and the simultaneous cochlear implant presents a greater gain, fewer complications and more efficacy than the sequential Cochlear Implant.

**Keywords:** Keywords: Cochlear Implant, Bilateralism, (Re) Habilitation and Simultaneous and Sequential Cochlear Implants.

## QUALITY IN HEALTH

***Carina Rama, Inês Vieira, Maria Monte, Rodrigo Carvalho***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

Currently, "quality" is a relative concept, depending on the individual interpretation. Being a dynamic, abstract context, difficult to define and measure, this concept came to change with time. Portugal, through the Ministry of Health, is the promoter of quality strategies at the level of the health system.

The objective of this work was to analyze the National Strategy for Quality in Health 2015-2020, verifying the aspects to be prioritized in this time period and to relate with the results obtained in the Euro Health Consumer Index study, evaluating the evolution from 2015 to 2017.

A bibliographical review of scientific articles and research studies has been carried out, prioritizing the National Strategy for Quality in Health 2015-2020, which seeks to enhance and recognize the quality and safety of health care delivery, guaranteeing the citizens rights in healthcare and the Euro Health Consumer Index study, which consists of an annual classification of European national health systems, with reference to a set of indicators, covering six thematic areas.

The priority implementations are: improving clinical and organizational quality; increased adherence to clinical guidelines; strengthening patient safety; permanent monitoring of quality and safety; recognition of the quality of health units; transparent information to citizens and increase their capacity.

Compared to 2015, Portugal in 2016 rose 6 places in the Ranking Health Systems, equaling 2017. In conclusion, the strategy defined was vital in the improvements between 2015 and 2017. Portugal presents a national health service in constant development, guaranteeing an improvement of quality over time.

**Keywords:** Quality, Health, Quality in Health, National Healthcare System

## **NEW HOSPITAL MANAGEMENT LAW**

***Guilherme Madruga; Juliana Santos; Mariana Girão; Sílvia Pedro***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The National Health System is characterized by being universal to the population covered and by providing comprehensive care or ensuring its delivery to it. In addition, it ensures fair access for users, in order to mitigate the effects of economic, geographical and other inequalities in access to care. This system also allows a regionalized organization and decentralized and participated management. The objective of this work is based on the understanding and clarification regarding the New Hospital Management Law as well as clarifying the objectives and benefits of it. As methodologies, a research was carried out in scientific articles and also a detailed review of some Decree-laws of the Constitution of the Portuguese Republic. The new Hospital Management Law (Decree-Law nº18 / 2017, of February 10) aims to improve the articulation between different levels of care, namely hospital health care, primary health care and integrated and palliative continuing care, as well as the need to generate efficiency and effectiveness gains in the NHS and greater professionalism and training of teams. Based on these factors, the Government found it necessary to concentrate in a single law the legal regime of entities that integrate the NHS related to the health care network and approve the specifics of the statutory entities of those entities. In conclusion, it is noteworthy that the adoption of this new law brought several benefits to the country and to the well-being and health of the population.

**Keywords:** National Health System; New Hospital Management Law; Hospital health care.



## MODERATING FEES

***Inês Nunes; Márcia Santos; Roksolana Stefuryn***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The National Health Service (SNS) ensures the right to health (promotion, prevention and surveillance) to all citizens of Portugal. It is "an orderly and hierarchical set of official health care institutions and services, operating under the oversight and tutelage of the Ministry of Health."

The objective is to clarify the population on the theme of the rates of moderation and the intention of their existence

The methodology applied in our study was based on Decree-Law no. 113/2011, of November 29 and the terms of Base XXXIV of the Basic Health Law. For this study, we also used an anonymous questionnaire to understand community knowledge and satisfaction on this subject.

In all the European Union countries, it has been found that more than half maintain a cost-sharing scheme with the patient for access to the family doctor, specialized outpatient clinic ("specialist doctors" other than general and family medicine) and hospitalization. Moderate fees are charged for "primary health care consultations, conducting diagnostic examinations, therapeutic services in public or private health services". Exempt are pregnant and parturient, minors, users with degree of incapacity equal or superior to 60%; users with economic insufficiency, blood donors.

In sum, the moderating rates "are the amounts charged in the health services, in order to mitigate the burden on the National Health Service, supported by the State", however, the amounts applied could be adjusted.

**Keywords:** SNS; Moderating rates; Community; Health

## **BENCHMARKING**

***Fábio Tavares, João Rodrigues, Marco Marques, Miguel Ferreira***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

Benchmarking is a management tool, defining itself as a continuous and systematic process that compares processes or functions of a particular company in order to achieve greater cost-effectiveness and efficiency in the internal organisation of the company. It is characterized by continuity, performance evaluation, performance in products, services and practices and constant improvement. In this way, your use by NHS Hospitals aims to improve the access and quality of services provided to users, as well as the financial performance of the institution. This work aims at the approach of the use of this tool in the Hospitals, as well as the advantages of your implementation and added value for users, notably the quality and safety in health care. The methodology was based on the analysis and study of scientific articles and of varied bibliography. The results of this management tool are reflected in access, performance, security, use and economic productivity. This tool consists in seeking administration best practices, with the goal of gaining competitive advantage. It makes use of reference points that already exist instead of creating something new.

**Keywords:** Benchmarking, efficiency, management tool

## IMPORTANCE OF TELEMEDICINE IN STREAMLINING HEALTH CARE

***Joana Oliveira, Leandro Batista, Rita Fernandes***

*Instituto Politécnico de Coimbra, ESTeSC-Coimbra Health School, Saúde Ambiental, Coimbra, Portugal*

The present work highlights the importance of the concept of Telemedicine and its evolution over the years, since it was implemented in Portugal. To this day, where this technology makes NHS accessible to everyone, nationally and internationally in PALOP. It is the use of new information and telecommunications technologies for the supply and medical care to patients and other health professionals who are located at a distance. This innovation has been applied more often in hospitals and health centres seeking other reference institutions for consultation and exchange of information, as well as publication of scientific articles and clinical cases, reporting results Laboratory, assistance to chronic patients, assistance to patients with mobility difficulties, distance education, real-time surgeries, among others.

This study had as objective main to see if the population is aware of this new technology, and to ascertain its usefulness to the general population.

This article is based on the bibliographic review of scientific articles, books and research on the Internet. It also has the results and its discussion of a questionnaire on the subject of the study to the community.

**Keywords:** Telemedicine, CHUC, technologies, health