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P 202 108

Phytochemical composition, antimicrobial and hemolytic activities of *Cynara scolymus* leaves extract.

Maryem BEN SALEM , Hanen AFFES , Kamilia KSOUDA , Serria HAMMAMI , Zouheir SAHNOUN , Khaled mounir ZGHEL Résumé

P 203 141

Premier isolat des leptospires chez les rats captures dans la région de Blida.

Lila LEKHAL , Anissa AMARA KORBA , Asma AIZA , Kahina RAZALI , Farida GHALMI Résumé

P 204 236

Valorisation et caractérisation physicochimiques des huiles d'olive de différentes variétés cultivées dans le Sud-Est Tunisien.

Mbarka BEN MOHAMED , Sihem BEN ALI , Ferdouas GUASMI , Naziha GRATI KAMOUN Résumé

P 205 267

Les indicateurs précoces permettant de valoriser les ressources génétiques céréalières en conditions de stress salin.

Amani BEN NACEUR , Chedly ABDELLY Résumé

P 206 272

Maintien en état de fonctionnement d'un enrouleur d'irrigation (Nord-Ouest Tunisien).

Youssef M'SADAK , Afoua MANAI , Mahmoud Elies HAMZA Résumé

P 207 286

Contribution à l'étude phytochimique, activité antioxydante et antibactérienne de l'extrait brut de *Thymus munbyanus* supb ciliatus.

Lazhari TICHATI , Kheireddine OUALI Résumé

P 208 374

Evaluation of ultrasonic, acid, thermo-alkaline and enzymatic pre-treatments on anaerobic digestion of *Ulva rigida* for biogas production.

Raida KARRAY , Sami SAYADI Résumé

P 209 130

Evaluation de l'activité antimicrobienne des extraits végétaux de *Daucus carota* L.

Thoraya DAHMANE , Imen BAADOUD , Latifa HALLI , Nassima BEHIDJ Résumé

P 210 579

***Arbutus unedo* L. and *Ocimum basilicum* L. as sources of natural ingredients for bread functionalization.**

Takwa SALLAWI , Cristina CALEJA , Lotfi ACHOUR , Lillian BARROS , Isabel C.F.R. FERREIRA

Arbutus unedo L. and *Ocimum basilicum* L. as sources of natural ingredients for bread functionalization.

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The overwhelming growth of the world population is causing direct consequences on food demands, which has forced the food industry to apply synthetic additives in order to meet the needs of the consumer and ensuring the global quality of the food products including aspect, texture and flavor. However, due to the publication of some studies describing adverse effects associated with these synthetic additives, the natural ones have been gaining increasing interest. *Arbutus unedo L.* (strawberry tree) fruits and *Ocimum basilicum L.* (basil) leaves, are important sources of bioactive natural molecules, especially phenolic compounds, including flavan-3-ols and phenolic acids, respectively .

The aim of this work was to demonstrate the antioxidant potential (free radical scavenging effect, reducing power and inhibition of lipid peroxidation) and the absence of toxicity (porcine liver primary cells) of ethanol extracts, obtained from the previously mentioned plants by using optimal conditions. Subsequently, the extracts were incorporated as natural ingredients in loaf bread samples, with two objectives: to functionalize loaf bread, introducing bioactive properties; and as natural ingredients with preservation capacity. Five groups of loaf bread samples were prepared: i) control (without natural or synthetic additives); ii) loaf bread incorporated with strawberry tree extract; iii) loaf bread incorporated with basil extract; iv) loaf bread incorporated with ascorbic acid- E300 (natural additive); and v) loaf bread incorporated with potassium sorbate- E202 (synthetic additive).

Both extracts (strawberry tree fruits and basil leaves) presented antioxidant activity (EC_{50} values lower the 595 and 351 µg/mL, respectively), without toxicity up to the maximal tested dose, and the main compounds present were (+)-catechin and rosmarinic acid, respectively. The introduction of both natural and synthetic additives in loaf bread when compared to the control sample, did not cause significant changes, neither in pH values, nor in color or any of the evaluated nutritional parameters. The obtained results demonstrate that these extracts could be used in the development of new loaf bread replacing the synthetic preservatives, without interfering with the physical and nutritional characteristics.

Keywords: *Arbutus unedo* L.; *Ocimum basilicum*; Natural ingredients; Bread.

Retour Sommaire