

The use of animals in medicine of Latin tradition: Study of the *Tresor de Beutat*, a medieval treatise devoted to female cosmetics

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Abstract

Zootherapy has belonged to the dermatological treatment in various cultures through the ages. The *Tresor de Beutat* is a medieval treatise devoted to

female cosmetics and health, written from eastern Spain in the 14th century. Many of these treatments were from animal origin. We transcribed the *Tresor de Beutat* to determine which animals and which parts of animals were used, as well as how they were used and what the therapeutic indications were. A total of 223 elements (animals, plants and minerals) were identified. Of these, 47 (21%) were of animal origin belonging to 30 animals, 15 mammals, 7 birds, 4 sea animals, 2 reptiles and amphibians and 2 insects. The treatments were used mainly for facial, body and hair cosmetics, hygiene, general health, and for cutaneous, otorhinolaryngological, ocular, dental and gynaecological disorders, as well as for pain relief. To conclude, the *Tresor de Beutat* provides information about the knowledge of topical treatments, being remarkable the use of products of animal origin with a scientific (rather than magical) base including elaborated formulations for cosmetic and therapeutic purposes, designed to achieve the ideal of beauty and health in medieval women. Some of those elements are still evident in the 21st century.

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1. Introduction

Animal-derived products have represented an important part of the dermatological therapeutic arsenal in different cultures through the ages. This is known as zootherapy (Alves, 2005) and even in the current world it still plays an essential role in health care. Although plants and plant-derived materials are the ingredients used in most medical systems, animals and their by-products are used as remedies in many traditional healing practices (Alves and Rosa, 2007; Agra et al., 2007; Alves and Alves, 2011; Alves et al.,

2013). Zootherapy constitutes an important alternative to other known therapies, even in modern societies. However, despite its prevalence and use throughout the world, this practice has often been ignored by ethnobiologists (Alves and Rosa, 2005; Quave et al., 2010), at least as compared with research on medicinal plants. Wild and domesticated animals and their derived products (hoofs, skin, bones, feathers, teeth...) are important ingredients in the preparation of preventive, protective and

therapeutic medicines in many cultures in China, Latin America, Africa and India (Alves, 2012). Zootherapeutic practices can also be found in Europe and they have been used in various areas in Spain (Quaveet al., 2010; Ceriacoet al., 2011; Palacín-Latorre, 1994).

The *Tresor de Beutat* is a medieval treatise written in the 14th century. It contains a set of medical and cosmetic recipes aimed exclusively at women. It is attributed to Manuel Dias Calatayud, written in Catalan, and catalogued as Manuscript 68 of the Library of the University of Barcelona (UB), Spain (Díes de Calatayud, Middle Ages).

The *Tresor de Beutat* includes descriptions of over 200 formules used at the time as remedies, cosmetic advice and different types of treatment for women inhabitants on the Mediterranean coast of eastern Spain in the 14th century. Many of these treatments comprise products of animal origin.

The aim of this study was to determine which animals and which parts of animals were used, how they were applied, and what the therapeutic indications were. We also examined the similarities and differences between these products and those still used for dermatological therapy in the 21st century.

2. Methods

The original version of the *Tresor de Beutat*, written in ancient medieval Catalan language was scanned and digitalised. A palaeographic transcription to formal Catalan language was then performed by three researchers in order to reach agreements about linguistic discordances, illegible words or possible semantic interpretations. Once the transcription was completed, all the semantic fields referred to animal therapeutic elements, were selected meticulously and analyzed for this study. The *Tresor de Beutat* consists of 93 chapters giving advice and treatments for various different health-related problems. The animals mentioned in the *Tresor de Beutat* as being used in remedies were classified according to their species following the International Code of Zoological Nomenclature (ICZN for animals), and the binomial nomenclature was employed (ICZN, 1999). A record was made of the particular part or parts of the animal used, the preparation procedure, and the indication mentioned. If any element was still in use this was also recorded.

All the content of the 93 chapters of the *Tresor de Beutat* was read carefully, analyzing it word for word and recording point by point the various health-related problems mentioned and the type of animal used for each problem.

The *Tresor de Beutat* has not been previously studied from a health view point

3. Results

The treatments identified were related to the following: hygiene, general health, cosmetics, skin disorders, ear-nose-throat area, eyes, dental conditions, gynaecological situations, and remedies for pain. In the *Tresor de Beutat* the products to be used were described in detail, as are their mode of preparation, procedure for application and medical indications. These fields reflected in the treatise were broken down according to the general medical practice.

A total of 223 products or elements used as remedies were identified; 145 of them are of vegetable origin, 21 minerals, and 47 (21%) of animal origin. The 47 animal-derived substances come from 30 different animals, of which 15 are mammals, 7 birds, 4 marine animals, 2 reptiles and 2 insects. The mammals included goat, ox, dog, deer, genet, hedgehog, hare, wolf, lamb, jenny donkey, rat and calf. The birds included capon, pigeon, crow, hen, goose, swallow and chicken. The marine animals were red and white coral, crab and cuttlefish. The reptiles and amphibians concerned the tortoise and the frog, and the two insects were the bee and the ant.

Different organs or parts of the animals were used. In the mammals, use was made of the skin (*tel*), specifically from the calf; fat from the deer, pig or lamb (*llard, seu or sagí*); visceral products like wolf's kidneys or pig's brains; the annexes, like deer's antlers or pig's trotters; secretions from the anal glands of the genet or the mammary glands of humans or jenny donkey (milk); salivary glands (*saliva*); depositions like dog's or rat's faeces (*feces*), as well as the manipulated whole animal (drowned rat or boiled hedgehog). In the birds use was made of the feathers (capon and hen), eggs (hen, chicken, crow), egg shell (pigeon), fat (hen), nests (swallow), head (swallows), the animal juice (goose, hen) and the faeces (crow). In the marine animals they used the whole animal flaked (crab or coral), the bone (cuttlefish) or the eggs (cuttlefish). In the insects they used the shell of ants' eggs, and wax and honey from bees. From the

reptiles and amphibians they used tortoises' eggs and blood, and frog's blood.

Table 1 shows the various different species and animals that appear in the *Tresor de Beutat* (with their original name and its translation), the part or parts of the animal used, its mode of preparation, and its therapeutic indication. Mention is also made of whether any of the original elements are still used. Table 2 gives information about the different health-related problems mentioned in

the *Tresor de Beutat*, as well as the type of treatment used for each problem, and the particular animal elements used.

Concerning the therapeutic application of all these products, the animals were used in the treatment of almost all the health problems mentioned in the treatise. Different animals are mentioned for the treatment of the same problem and one animal may have different uses depending on the particular part of that animal or its mode of preparation.

Table 1: Animals that appear in the *Tresor de Beutat* (with their original name, English translation and binomial name), the part or parts of the animal used, its mode of preparation, and its therapeutic use

	Original	English	Binomial name	Part used	Preparation	<i>Tresor de Beutat</i>	Current use
	Name	Name				Uses	
MAMMALS	Boch	Billy goat	Capraeagrus	Faeces	Mixedfat	Peeling	No
	Bou	Ox	Bostaurus	Faeces	Mixed	Peeling	No
	Ca	Dog	Canis lupus familiaris	Faeces	Ointment	Hairloss	No
	Cervo	Deer	Cervuselaphus	Such Blanch Banya		Depigmentation Depigmentation Teethwhitener	Creams (cyclists)
	Civeta	Genet	Genettagenetta	Anal gland Secretions		Perfumes	Yes (cosmetic fixer)
	Eriçó	Sea urchin	Erinaceus europaeus		Boiled	Epilatoryagent	No
	Humà	Human	Homo sapiens	Milk Saliva		Red eyes Wounds	No
	Llebre	Hare	Lepusaeropaeus	Faeces	Ointment	Headache	No
	Llop	Wolf	Canis lupus	Kidneys	Ointment	Headache	No
	Moltó	Lamb	Ovisaries	Seu	Ointment	Stretchmarks	Yes (lanolin)
	Porc	Pig	Sus domesticus	Lard Lard Brain Nails	Ointment Ointment Cream Powder	Sorebreasts Dental decay Hands Teethwhitener	No
	Ovella	Sheep	Ovisorientalis	Hot faeces	Ointment	Sorebreasts	No
	Somera	Donkey, Ass	Equusasinus	Milk	Foment	Skinwhitener	No
	Rata	Rat	Rattusnoruegicus	Faeces Drownedrat	Ointment	Hairloss Peling	No
	Vitel·la	Calf	Bostaurus	Membrane	Ointment	Skinwhitener	No
	BIRDS	Capó	Capon	Gallusgallus domesticus	Neck	Cream	Hands
Colom		Pigeon	Columba livia	Eggshell	Powder	Soreeyes	No
Corb		Crow	Corbuscorax	Eggs Faeces Gall		Black dye Cataracts Cataracts	No
Gallina		Hen	Gallusgallus domesticus	Lard JuiceFeathers	Ointment Cream Cream	Foreignbodies in ears Depigmentation Hands	No
Oca		Goose	Anseranser	Juice		Depigmentation	No
Oreneta		Swallow	Hirundo rustica	Nest Head	Punctured	Poor vision Sorelips and mouth	No
Poll		Chicken	Gallusgallus domesticus	Eggs		Nasal fistula Headache	No
PEIX	Coral Vermell	Red coral	Coralumrubrum		Powder	Teethwhitener	No
	Coral Blanc	White coral	Madreporaoculata		Powder	Repeated miscarriages	No
	Peixcranc	Crab	Carcinusmaenas			Whitener	No
	Sípia	Cuttlefish	Sepia officinalis	Shell Bone Eggs		White face White teeth	No

INSECTS REPTILES	Abella	Bee	Abeja melifera	Wax Honey	Ointment	Toothache	No
	Formiga	Ant	Lasiusneglectus	Eggs (shell)	Powder	Epilatoryagent	Yes
	Tortuga	Tortoise	Carettacaretta	Eggs Blood		Epilatoryagent	No
	Granota	Frog	Pelophylaxperezi			Epilatoryagent	No

Table 2: Health-related problems mentioned in the *Tresor de Beutat*, type of treatment used for each problem, and particular animal elements used

	TYPE OF TREATMENT	ANIMAL ELEMENTS USED
HYGIENE	Perfume	Genetanal's gland secretion
FACIAL COSMETICS	Hydrating creams	Chicken fat, ox bile and tortoise blood
	Facial epilators	Rats, ants' eggs, hedgehog, tortoise and frog's blood
	Potent peelers	Drowned rats
	Whiteners	Mixed goat's bile, cuttlefish bone, fresh eggs mixed with vinegar
HAIR COSMETICS	Hair loss	Rat's and dog's faeces
BODY COSMETICS	Black dyes	Crow's eggs
	Hand creams	Pig's brain, and feathers from a capon's neck or black chicken mixed
	Nipple crack	Pig's skin, sheep's faeces, crushed frogs
	Stretchmarks	Ram's fat, beaten egg white, lard
DERMATOLOGIC DISEASES	Sore breasts	Hot sheep's faeces
	Stains and moles	Fresh eggs mixed with vinegar
	Wounds and pustules	Fresh eggs, goat's bile, hen's fat, and white coral
	Irritation from epilation	Ants' eggs
ORAL HEALTH	Lip and tongue pain	Swallow's head
	Toothache	Deer's antlers, chicken fat
	Inflammation of the gums and tongue	Cuttlefish, honey, swallow's nest
	Dental caries	Lard from old pig and honey
ORL	Tooth whitener	Cuttlefish bone and deer's antlers
	Earache	Milk, egg white, pearl, young calf's gall and honey
	Deafness	Pig's bile
	Foreign bodies in the ears	Lard, chicken fat, rennet herb
GYNAECOLOGY	Nasal fistulas	Eggshells
	Spots...":	Hot tallow
	Wounds...":	Saliva
	Repeated miscarriages	Powdered white coral
EYES	Poor vision	Swallow's nests
	Cataracts	Faeces and crow's gall
PAIN	Headaches	Ointments with egg white and rabbit's gall

4. Discussion

Tresor de Beutat occupies an outstanding place in 14th century literature. Its owner was Pere Miquel Carbonell (Barcelona 1434-1517) butler at the court of Alfonso of Aragon (Medina del Campo 1396-Nápoles 1458) (Mestre i Campí, 2004). Although some prefer to consider the work anonymous it has been attributed to the Valencian writer Manuel Dias Calatayud, baron of Andilla, who represented the Parliament of the Kingdom of Valencia at the Compromise of Caspe in 1412 and accompanied the king on the conquest of Naples in 1443 (Mestre i Campí, 2004). Certain confusion exists concerning the document itself, as it has also been called the *Flors de*

Medicina (Cabré i Pairet, 1994). This then enables us to state that the *Tresor de Beutat* is plainly related with the medical production of the times by authors from the Schools of Cordoba or Salerno, among whom are Arnau de Vilanova, Lluís de Alanís and Trótula (Cabré i Pairet, 1994; Cantalupo and Cavallo, 1994; Paniagua-Arellano, 1969; Green, 2000; Green, 1989; Green, 2001; Donahue, 1988). Although the *Tresor de Beutat* has been translated to Spanish (Olañeta, 1993) and Italian (Minervini, 1991), the original document has never been studied in depth from the linguistic, medical or pharmacological viewpoint.

The content of the *Tresor de Beutat* is addressed mainly to women, probably young women of childbearing age and a high social class. The treatments mentioned, aimed at enhancing corporal beauty, contrast with the anonymous character of the female condition of those times. This suggests that the *Tresor de Beutat* was written more specifically for courtesans, or perhaps midwives, who were the only health care professionals who enjoyed certain privileges at the court (Julià-Gisbert et al., 2008; Pamo-Reyna, 2007; Emrenreich and English, 1973) in relation to women's health, from which men in those times were barred. In fact, though the exercise of the medical profession by women remained forbidden up to the 14th century, the practise of obstetrics and the care of children during their first months of life were almost exclusively in the hands of women. On those very few occasions when a woman practised medicine, she did so as a member of a monastic order, or because she was the wife or daughter of a famous physician. In this respect, the Medical School of Salerno was an exception as it permitted the access of women to the medical profession. In the Middle Ages this prestigious School of Medicine became the first nucleus of the *Salernitan Studium*, later to be used as a model for other European universities.

A notable figure at this School was *Trotula de Ruggiero* (1110-1160), authoress of a few works devoted to women's health (Paniagua-Arellano, 1969; Donahue, 1988; Cavallo et al., 2008), as well as of the most famous treatise on Obstetrics and Gynaecology of the Middle Ages: *De Pasionibu smulierum curandorum ante, in, post partum*, as well as *De Aegritudium curatione* or *De Ornatu mulierum* (Guerrero-Peral and Defrutos-González, 2010). Many historians debate whether *Trotula* was a woman or if she even existed and her works have been attributed to a man being the name of *Trotula* a pseudonym. In any case this treatise represented a true revolution at the time, as it gave recommendations for women about daily hygiene, regular physical exercise, massages with oils, a balanced diet, and several curious recipes for female cosmetics to combat wrinkles, look after the hair and whiten the teeth.

According to the canons of beauty of the Late Middle Ages (Puig Rodríguez-Escalona, 1995; Puig Rodríguez-Escalona, 1998; Eco, 1986), the beautiful women should have fine white skin but rosy cheeks; a face with no wrinkles or hair, free of acne, and no marks or impurities; a wide forehead, eyebrows not too

thick and painted or dyed in black, like the eyelashes and the eyes, to be highlighted in black; a healthy red mouth and gums, with strong white teeth; hair that was to be long, straight, thick, bright, smooth, and dyed blond or black; a long neck, smooth white hands, and small hard round breasts. A beautiful woman should also be firm bodied, with narrow apparently virgin genitalia, and with the body giving off a pleasant smell (Puig Rodríguez-Escalona, 1998; Iradiel, 1986). The various treatments mentioned in the *Tresor de Beutat* are in accordance with these standards of beauty.

Of note, though, is the fact that in Catalonia, the practices described in the *Tresor de Beutat* contrast with certain other discourses of the time, such as those given in the *Somni* by Bernat Metge (Metge, 2004), or the moral recommendations of Jaume Roig in *L'Espill o Llibre de les dones* (Roig, 1478), which launches a violent attack against women, though with ingenuity and sharpness of wit, in the purest misogynist tradition, not to mention the sermons of Saint Vincent Ferrer (Beati Vicentii, 1527). All these authors censored works dealing with the practices of female hygiene and cosmetics, due to the bad intentions they entailed aimed at seducing men (Puig Rodríguez-Escalona, 1995). The *Tresor de Beutat* contains many interesting aspects, from the scientific viewpoint as well as historically and linguistically. These latter, though, are not the subject of this paper, which will be limited to the aims described.

Zootherapy occupies an important place in the *Tresor de Beutat*, as 20% of the treatments mentioned contain products of animal origin. Some of these animals were domestic animals, like the pig or chicken. Others, though, were less common but still easy to find, like frogs or ants, but there were also some exotic animals like coral or mastic much more difficult to obtain. Animals used in zootherapy are mostly associated with the surrounding area, such that the animals mentioned in the *Tresor de Beutat* were domestic animals from the Mediterranean area, very different to those used in other parts of the world where other types of wild animals predominate, like in Brazil, Asia, or China. The fact that the *Tresor de Beutat* also mentions use of certain exotic species as red and white coral or tortoise supports the idea that the treatise was written for courtesans of a certain economic status who could afford these sorts of raw materials. In addition, almost all the treatments mentioned in the *Tresor de Beutat*

are used for their medical not for magical properties as happened in other cultures (Agra et al., 2007; Alves and Alves, 2011; Quave et al., 2010). Of note is the meticulous description of the preparation of the formulations and the procedures. For instance, details are given about how the rats' faeces mixed with rose oil are placed in the palm of the hand and applied on the head to stimulate hair growth; but the treatment is so effective that care must be taken because it may even cause an excessive effect, leading to the growth of hair where it should not appear, like on the palm of the hand if too much is placed there ...("pèls e auran-i en breu encara en la palma de la mà si nusats deposar molt...") ("if you use a lot of the preparation even you can grow hair on the palm")

The main elements mentioned in the *Tresor de Beutat* are plants, about which much was known. Nevertheless, animals also formed part of the therapeutic arsenal, as could be seen in other non Mediterranean cultures over the ages.

Animals, particularly mammals, were much used. They were widely used to obtain fat, though in some cases they provided fluid products (juice, blood) or some of their parts were ground to produce powder (nails, bones). Other animals, like birds or fish, were also of interest for their eggs, feathers, or fluids. Indeed, even nowadays we still use similar products in Mediterranean countries like Albania, Italy or Spain, as well as further afield like Nepal, where 75% of animal-derived products are used for skin care (Quave et al., 2010). Interestingly, though we come across the use of faeces in the *Tresor de Beutat*, unlike other treatises no mention is made of the use of urine.

The composition of the remedies or therapeutic substances warrants consideration of the active ingredient and the excipient or vehicle. The composition of topical products, both cosmetic and therapeutic, usually involves solid particles like powders, liquids and fat. The various combinations of these three elements give rise to the different formulations traditionally used and which still persist in the current pharmacopoeia (Baran and Maibach, 2010).

In the *Tresor de Beutat*, the animal-derived products were used mainly as oil excipients in the composition of ointments and creams for various therapeutic purposes, such as moisturisers, analgesics, removal of foreign

bodies or depigmentation, and less commonly as liquid excipients (juice, bile, blood) in the treatment of wounds, cataracts or conjunctivitis, and occasionally as powder (coral or cuttlefish bone) to whiten the face or teeth. In certain preparations we can find the use of the animals themselves as the active ingredient. In these cases use was made of the properties of the whole animal, either manipulated, as for example crushed frog to combat nipple cracks or boiled hedgehog as a powerful hair remover, or part of the animal, like swallows nests for cataracts.

The bases of topical therapy in the 21st century still contain the elements that form the therapeutic triangle (fat, liquid and powder). Unlike earlier times, however, use is now widely made of synthetic products, though cosmetics still resorts to natural substances, usually of vegetable origin.

Nowadays, the use of animals in cosmetics is strictly regulated and use of elements from animals must meet a series of requirements, relating to both obtaining the products (the animals must not suffer), and in their manufacture (procedures for obtaining and elaborating the products depending on which part of the animal is involved, its mode of death and the time it has been dead), such that use of animals in cosmetics and topical treatment is now very restricted (AEMPS, 2009; Real Decreto 1599, 1997; Reglamento (CE) 1223, 2009). Even so, it is notable that some of those elements used over 500 years ago are still being used, as for example the much used lanolin (oil obtained from the wool of sheep), or the wax or honey from bees.

Other animal-derived products exist that are not mentioned in the *Tresor de Beutat*, such as whale sperm, snail slime, mink oil, the placenta, or keratin, all in current use nowadays in folkmedicine (Jash et al., 2011; The st Petersburg, 2013; Magicsportfood.com, 2013; Wisegeek, 2013; UVA, 2013). Thus, we can now find together with the more conventional topical treatments a series of alternative cosmetic therapies running parallel to official medicine and cosmetics that reflect the great influence of popular or folk medicine over the centuries. Indeed, in the 21st century it is not unusual to be offered depilation using ants' eggs, or find soaps with silk-worm proteins, deer fat for cyclists, or horse shampoo to strengthen the hair.

Research Highlights

We conducted a comprehensive study of the *Tresor de Beutat*, a treatise of medieval female cosmetics. All therapeutic elements contained in the manuscript have been analyzed. We have focused our research on the use of animal products, as one of the least known and reported issues. It is the first publication that studies zootherapy within this context.

Limitations

The work we have done is focused on the text of *Tresor de Beutat*. Its content is representative of the Mediterranean coast of eastern Spain in the 14th century but it can not be generalized to the rest of the medieval world.

We could have explored more in the comparison with the use of animal products today. However, it is difficult to tackle with treatments that are mostly used in alternative therapies than in classical treatments.

Recommendations

To reduce the above limitations it would be necessary on the one hand the implementation of a detailed comparative study with other medieval documents, and secondly a field work to detect the influence of zootherapy on current alternative medicines. It would also be interesting to expand the approach to other therapeutic areas such as the study of herbal, mineral or inorganic products.

Justification of Research

The main merit of this work is that is part of a comprehensive research project on *Tresor de Beutat*, a treatise of medieval cosmetic and therapeutic that has been thoroughly transcribed and analysed from different angles. In this paper, we address the use of therapeutic products of animal origin, as one of the most important aspects to consider.

Conclusion

The *Tresor de Beutat* provides information about the ample knowledge of topical treatments, with a scientific (rather than magical) base, that has transcended to modern times. This information has, in part, laid the scientific ground for cosmetics as well as partially explaining the parallel persistence

of a world of alternative therapies that is nourished from thousand-year-old knowledge. Of note in the *Tresor de Beutat* is the important presence of the animal world for the preparation of a wide range of treatments designed to achieve the ideal of beauty and health in medieval women.

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