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THE MOLE: AN UNUSUAL ITEM OF MATERIA MEDICA

Abstract: The mole (*Talpa europea*) has a long history of use as medicament beginning with rather sparse records in classical and medieval writings. The number and diversity of mole therapies expanded during early modern times. This, the first survey of mole-containing medicines in scientific medical literature, reveals that they were used to treat, amongst other ailments, rheumatism, arthritis, hernias, prolapse, leprosy, epilepsy, wounds, and a wide range of dermal, dental, ocular and aural conditions. Preparations were generally quite simple, comprising either isolated organs from the animal (liver, blood, teeth, skin) or the whole carcass, usually in the form of a pulverised ash.

Keywords: mole, epilepsy, rheumatism

Non MeSH: Kyranides, Hildegard of Bingen

Introduction

Talpa europea, the Common, European or Northern Mole (Fig. 1), ranges throughout Europe and western Asia as far as Siberia. A subterranean tunnel-dwelling mammal, it feeds on earthworms, a variety of insects, centipedes and other invertebrates, and even occasionally small mammals such as shrews and mice. Adaptations to its mode of life include a cylindrical body measuring up to 16 cm in length, small eyes and ears enclosed in skin ridges, reduced hindlimbs, powerful forelimbs with large paws for digging (including a supernumery sickle-shaped digit next to the thumb, known as the prepollex or 'os falciforme', developing from the radial sesamoid bone), and velvety dark grey fur. The females (sows) are smaller than the males (boars). The burrowing lifestyle of the mole led to its widely-held, historical and chthonic folklore association with the underworld and thence to superstitions relating to death, witchcraft and the wielding of supernatural powers. [1 col12; 2 p202] Indeed, Pliny the El-

der (AD 23-79) in his *Naturalis Historia* notes that 'Of all animals it is the mole that the magicians admire most!' and that 'there is no animal in the entrails of which they put such implicit faith'; swallowing the still-beating heart of a mole supposedly conferred the gift of divination on the consumer. [3 p429; see also 7 p100]

The therapeutic uses of the mole have been briefly examined from the point-of-view of folk medicine with a special emphasis on records from the USA. [2] The objective of the present paper is to expand this analysis and to extend it to a survey of early modern medical texts. The history of the mole as an amulet and in European folk medicine, particularly during the nineteenth century, will be considered elsewhere.



Fig. 1. The European Mole (Talpa europea) from Topsell (1658): A History of Four-footed Beasts. Author's copy.

Early Works

The earliest recorded use of the mole in medicine appears to be that of the Roman commander, naturalist, philosopher and author, Pliny the Elder, [3 p429] who collated a wealth of contemporary folklore into his encyclopaedic *Naturalis Historia*, probably written around AD 77. [4 p179] Pliny cites attaching the tooth of a live mole to the body as a cure for toothache. He also states that 'the mole neutralizes the bite of the shrew-mouse', but comments rather disparagingly that even using the earth from a cart-wheel rut would accomplish the same thing. [3 p429] Subsequent references to the medicinal use of moles are rather sparse until early modern times when the publication of numerous volumes both in Latin and vernacular languages followed in the wake of the printing revolution during the late fifteenth century.

The mole does not seem to be featured in Dioscorides' *De Materia Medica*, for example, or the medical works by Galen of Pergamon (129-c. 216), and neither is it mentioned by medieval Arabic medical scholars such as Avicenna (980-1037), al-

though there is some debate over the translation of the Arabic term 'kuld' which most likely refers to the mole-rat (*Heterocephalus glaber*, a rodent). [5 p34] Of those western authors who commonly repeated information from Pliny, Isidore of Seville (c.560-636) gives brief mention of the animal and its life habits but does not indicate any medicinal applications. [6 p254]

The *Kyranides* is a compilation of magico-medicinal lore dating from the fourth century. Originally written in Greek, complete or partial translations have been made into Latin, Arabic, French and German. An English version was published in 1685 [7] and the entry for the mole gives the following advice:

And if any one have Parotides, the King's Evil, or any Aposteme, and you take a living Mole, and handle it so long in your Hands till it dies, you will cure all such Diseases; neither will the Patient afterwards have any sore Throat, or Blisters, or Buboes, or King's Evil any more, or any Aposteme. Its Fat melted, cures sore Eyes excellently well. Therefore bury a Mole in your House. [7 p101]

The burying of a mole within the home, as well as holding a living animal in the hands until it expires as procedures for ensuring the therapeutic efficacy of the animal are introduced here for the first time. The Parotids are the largest of the salivary glands and are located adjacent to the ears. Inflammation (parotitis) may be caused by a number of factors including the viral disease Mumps. 'Aposteme' is an obsolete word for an abscess or some form of swelling filled with purulent matter, and the King's Evil is a term derived from the Latin *morbus regius* ('royal sickness') – also known as scrofula or struma, this disease involved tubercular swelling of the lymph glands (tuberculous lymphadenitis).

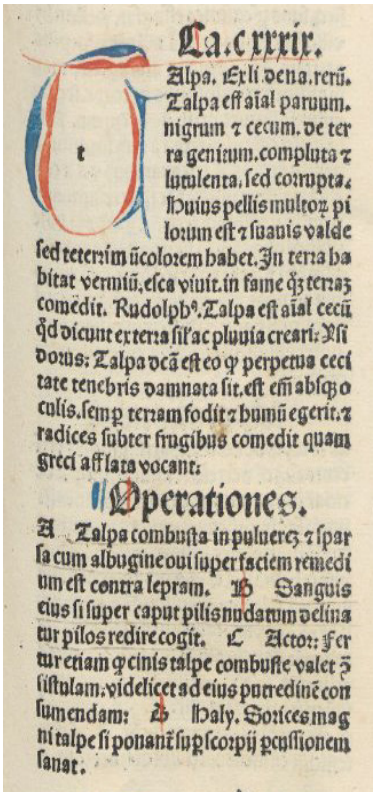
Some novel medicinal applications seem to make their first appearance in medieval times. The Benedictine Abbess, Hildegard von Bingen (c.1098-1179) was a visionary, mystic, healer, linguist, poet, artist, musician, composer, biographer, theologian and preacher. Her *Liber simplicis medicinae* ('Book of Simple Medicine'), also referred to as the *Physica* contains nine books, one of which deals with animals. As with many of her entries, Hildegard's reference to the mole is delightfully idiosyncratic. Following a brief description of its life habits, she remarks that, despite supposedly being blind 'it has much knowledge within' – seemingly a reference to its medicinal qualities. [8 p223] Warning that no-one should ingest it (presumably raw) as a medicine, she goes on to indicates that 'a person who is putrescent inside or who has scrofula on his body' should eat a mole cooked in water, or consume a powder made from it in any way possible in order to restore the body to health or to treat any unruptured scrofula. Her explanation as to the mode of action of this medicine is that it 'sends away the rotten matter from inside a person's body' in the same way that a mole throws out 'bad' earth from the tunnels which it excavates. [8 p223] Furthermore, the patient should avoid the heart and lungs of the animal, but that eating the liver with the rest of the body will ensure that 'putrid matter' is successfully eliminated. [8 p223]

Hildegard recommends quite a complex procedure for the treatment of epilepsy. Her recipe consists of mole's blood, the beak of a female duck and the feet of a female goose pulverised together in specific proportions (4:2:1). The powder should be tied in a cloth and placed for three days over an active molehill, before removing it to

an icy place so that the contents can successfully congeal. After drying the mixture in the Sun it should be reduced to a powder. Then, small medicinal cakes should be made comprising the livers of both moles and unspecified birds mixed with a little wheat flour, cumin and the pre-prepared powder. The cakes were then to be consumed over five successive days to secure a cure. In the event that the symptoms were not eased, this five-day regimen was to be repeated seven times. [8 p223]

The thirteenth century Dominican friar Vincent of Beauvais or Vincentius Bellovacensis (c.1184-c.1264), referred to the mole in Book 21 of his *Speculum Naturale* ('Mirror of Nature') [9 p18; 10], an attempt to summarise the whole of medieval knowledge in one enormous compendium. Here, he introduces the idea that ashes of mole sprinkled with egg white onto the face is a treatment for leprosy, that smearing the blood on the head eliminates baldness, that the dung cures alopecia, that the entire animal (split apart and placed on the site) heals scorpion stings and that ashes of mole will consume the 'rottenness' inside a fistula. Four of these items (not the dung) are repeated in the animal section of the *Ortus Sanitatis* ('Garden of Health'; Fig. 2), an extremely popular text reprinted in many 'pirated' editions following the *editio princeps* (1491) of Jacob Meydenbach in Mainz. [11 cap.139]





Ca.cxxxix.

Talpa. Exli dena. rerū.
Talpa eſt aīal parum.
nigrum ⁊ cecum. de ter
ra genitum. compluta ⁊
lutulenta. ſed corrupta.
Huius pellis multoꝝ pi
lorum eſt ⁊ ſuauis valde
ſed teterim ūcolorem habet. In terra ha
bitat vermiū. eſca viuit. in fame ꝙz terraz
comēdit. Rudolphꝰ. Talpa eſt aīal cecū
ꝙd dicunt ex terra ſil'ac pluuia creari: Ni
dorus: Talpa dcā eſt eo ꝙ perpetua ceci
tate tenebris damnata ſit. eſt eīi abſq; o
culis. ſemp terram fodit ⁊ humū egerit. ⁊
radices ſubter frugibus comedit quam
greci afflata vocant.

Operationes.

Talpa combuſta in pulverez ⁊ ſpar
ſa cum albugine oui ſuper faciem remedi
um eſt contra lepram. Sanguis
eius ſi ſuper caput pilis nudatum delina
tur pilos redire cogit. Actor: Fer
tur etiam ꝙ cinis talpe combuſte valet ꝫ
ſiſtulam. videlicet ad eius putredinē con
ſumendam: Haly. Sorices mag
ni talpe ſi ponant ſup ſcorpij paſſionem
ſanat.

Fig. 2. Entry for Talpa, the mole, from Cuba (1491): Ortus Sanitatis. De animalibus cap.cxxxix. Countway Medical Library, used with permission.

The *Liber aggregationis* ('Book of collected items') has been ascribed to the thirteenth century German Dominican friar, Albertus Magnus (c.1200-1280), a very influential philosopher and theologian. It seems clear, however, that the anthology borrows from Albertus, but was not necessarily compiled by him; the author is now generally referred to as Pseudo-Albertus. First appearing in incunabular editions from 1477 onwards, the volume was translated into Italian (1515), French (c. 1520), German (1548) and English (1595) [12 pxliii]. The author points out that, wrapped in a laurel leaf and put into the mouth of a horse, the mole will cause a horse to flee in fear, that placed in a bird's nest it will cause the eggs to addle, and that a decoction of mole will cause a horse to turn colour from black to white. [12 p59]

With the advent of printing using movable type, the dissemination of knowledge in both Latin and vernacular languages expanded dramatically; ancient, classical and religious texts were made generally available in large numbers both in their original languages and in translation. New medical authors began to publish their research, accounts of their patients' case histories, opinions and working pharmaceutical receipts in a burgeoning literature that only increased in depth and volume through the sixteenth, seventeenth and eighteenth centuries. The mole makes a sporadic appearance as an item of materia medica in a highly scattered literature during the early modern period. Some of the entries clearly relied on the authority of earlier classical and medieval authors for largely unquestioning repetition, while others represent novel applications often seemingly borrowed from an otherwise undocumented folklore tradition. The following survey will present the suggested therapeutic applications of the mole by disease, rather than by individual author.

Treatments using moles in early modern texts

Eyes

Apprenticed to a barber-surgeon in Dresden at the age of thirteen, Georg Bartisch (1535-1607) moved on to become an itinerant surgeon throughout Bohemia, Silesia and Saxony. Eventually returning to Dresden, despite his lack of any formal academic training, he was appointed court oculist to Augustus I (1526-1586), Elector of Saxony in 1583. Considered by some to be the 'father of modern ophthalmology', Bartisch published the first Renaissance text on ophthalmology and eye surgery in 1583. It was entitled *Ophthalmodouleia. Das ist Augendienst* ('Ophthalmodouleia. That is The Service of the Eyes') and written in vernacular German, aimed at laymen and non-university-trained practitioners. [13] Bartisch fully embraced the idea that witchcraft had a direct bearing on health [14] and believed that the wearing of spectacles was deleterious to acute vision. Bearing in mind the superstitions surrounding the mole, perhaps it was these background beliefs that led him to include mole-containing recipes in some of the medicaments he recommended for conditions associated with the eye.

A stye or hordeolum is generally due to a pyogenic bacterial (usually staphylococcal) infection of an eyelash hair follicle. It often involves blockage of the Glands

of Zeis, also known as the Glands of Moll, modified sebaceous glands which service the eyelashes. This tends to give rise to rapid-onset localised pain, redness and swelling of the eyelid associated with a pus-filled lesion. Bartisch recommended a particular salve for styes which he said should be applied twice a day. [13 p150] In a partial echo of the *Kyranides* [7 p101] the recipe called for mole lard, Verjuice oil (an acidic preparation made from pressed unripe grapes), olibanum (oil of frankincense), Mastic (a resin from the Mastic Tree, *Pistacia lentiscus*), ceruse (lead carbonate, $PbCO_3$) and ash of coltsfoot (*Tussilago farfara*). After melting the fat and oil together, the other ingredients were added and processed to form a fine powder. At this point 'deadened mercury' was added and the mixture blended in a mortar. According to the medieval Christian Arab physician from Baghdad, Ibn al-Tilmidh (1074-1165) deadened mercury consisted of 'mercury into which salt and ashes have been mixed (and left) for a long time so as to form a cohesive mass'. [15 p281] The burning of animal and mineral ingredients to produce a therapeutic ash seems to have been a means of removing perceived impurities from the material and concentrating its active medicinal components.

Next, Bartisch commends the use of an entire mole in a preparation designed to treat warts on the eyelid. (13 p153) These he described as white, smooth and simple and refers to them by their Latin names as *Myrmeciae*, *Formicantes* and *Sessiles*. He is probably describing common filiform warts, although the name *Myrmecia* in modern nomenclature refers to a wart caused by human papillomavirus 1 infection. In addition to the mole, the recipe required the phosphate-rich white excrement from a starved dog (*album graecum*), calf excrement, Pasqueflower (*Pulsatilla vulgaris*) and St. Peter's Wort (otherwise known as St. John's Wort - *Hypericum crux-andreae*), each measured by the handfull. After mixing the ingredients together and turning them to ash in a potter's kiln, the material was rendered into a fine powder and mixed with beer vinegar. Allowed to stand for eight hours, the mixture was then distilled before being applied to the skin surface.

Bartisch's final mole-containing recipe was aimed at fistulas occurring in the eyelids or the corners of the eye. (13 p173) This was a much simpler recipe containing only a complete mole and dove excrement, powdered together to produce the medicament.

Hair

Mole preparations are quoted surprisingly often in various treatments for both hair restoration and depilation. The English botanist, herbalist and physician Nicolas Culpeper (1616-1654) was a prolific medical author and included numerous translations and digests in his printed works. In his collection of recipes originating from the Swiss physician Johannes Jacob Wecker (1528-1586), he cites a mole-containing preparation designed to encourage the growth of the beard:

> Take the ashes of a Mole dried in an oven, two ounces, the ashes of Bees, of Filberds burnt, each one dram and a half, Mouseturd two drams, Labdanum a dram and a half, the best Honey one ounce, Oyl of Nard, Wax, each a sufficient quantity; make a Liniment, but in the morning following you must wash your face with this Decoction: Take of Maidenhair, male

> Southernwood, Rosemary, Myrtle-leaves, the rine of Reed roots, Flowers of Chamemel, red Roses, leaves of sowre Dock, each one handful, Pockwood half a pound, make a Decoction and use it as hath been said. [15 p69]

Set against this, he also suggests an ointment designed to hinder the growth of hair. This comprised the fat obtained from moles, frogs and bats, plus 'Gum of Ivy'. A second recipe called for burnt dates and 'spike', powdered and mixed with honey and mole excrement in order to produce an unguent.

The English cleric Edward Topsell (1572-1625) utilised much information culled from the works of the Swiss physician Conrad Gessner (1516-1565) in his *The History of Four-Footed Beasts and Serpents* of 1658. Topsell recommends a slightly different way of using the mole to eliminate hair from any part of the body. He suggested steeping the body of a mole in water and allowing it to decompose until the hairs were completely detached from the pelt. Anointing the skin with this water, and then with ash lye (a strong, alkaline hydroxide) followed by rubbing the area with a linen cloth was a guaranteed means of permanent hair removal. [16 p391] After making that last statement, Topsell goes on to indicate that the hair can then be restored using an ointment made of the ashes of burnt mole mixed with honey. For hair loss in horses, he recommends rendering a mole completely down by boiling in oil and then anointing the bald spot twice daily.

The latter recipe recalls Vincent of Beauvais' recommendation of mole dung in the treatment of alopecia. Indeed, de Beauvais' suggestion that mole's blood was a good treatment for baldness is reiterated by numerous early modern writers including the German botanist Adam Lonicer (1528-1586), [45 p624] the German physician Johann Schroeder (1600-1664), [18 p78] the Polish author of Scottish descent John Jonston (1603-1675), [19 p90] the German alchemist and adventurer Johann Joachim Becher (1635-1682/85), [20 p48] the Swiss medical compiler Jean-Jacques Manget (1652-1742) [21 p944] and the Leipzig publisher and encyclopaedist Johann Heinrich Zedler (1706-1751). [22 col2184] In the words of the Italian Capuchin friar, Felice Passera (1610-1702): *Sanguis recens illitus, Capillis Caluitiem decorat* ('Varnished with fresh [mole] blood it decorates baldness with hair'). [23 col793] This last author also indicates that the ash of a mole burnt alive in a new Pignata or earthernware cooking pot, with apples if desired, when sprinkled onto the scalp will encourage new hair to grow. [23 col793] Felix Platter (1536-1614) seems to recommend the grease or fat obtained from a mole specifically to be good for encouraging hair growth. [24 p508]

Hair colour could also be controlled using mole preparations as first indicated by Pseudo-Albertus Magnus (see above). Topsell, once again, gives the most detailed account for turning horse hairs from black to white. A mole should be boiled in salt water or ash lye for three days, renewing water lost by evaporation as necessary. Washing the patch of black hair with the hot liquid would supposedly cause the black hairs to fall out, only to be replaced with white hairs, [16 p391] information reiterated in a variety of other sources. [24 p509; 22 col2185; 45 p625] Thomas Vicary (died 1561) had a slightly different approach to this operation; he suggested powdering 'mole-warps' with brimstone and, after mixing the result with Celandine juice and letting it stand

for several days, distilling the liquid to use as a wash in order to whiten 'any place' on a man's body. [25 p111]

Leprosy

The interpretation of what is meant by leprosy in historical medical texts is fraught with difficulty; a lack of detailed description of the symptoms involved in the particular cases being discussed often makes retrospective clinical assessment impossible. The term probably embraced a wide range of severe, chronic skin diseases including the mycobacterial infection also known as Hansen's disease.

As mentioned above, the use of mole ash to treat this disease seems to have been first mentioned in the thirteenth century by Vincent of Beauvais. Several authors reiterate this recommendation. [18 p78; 22 col2184; 23 p793; 27 p92] John Pechey (1655-1716) indicates the high temperatures needed to reduce the mole to ash by stating that the animal should be calcined. [26 p215] Some authors recommend that the ash is blended with egg whites, oil or honey before being applied to the skin. [18 p78; 21 p944; 27 p92]

Ears

A small number of authors refer to the use of mole-containing preparations in the treatment of aural problems. Ralph Williams (fl. 1650s) remarks that the oils of both the Weasel and the Mole are helpful in situations involving pain in the ears or difficulties with hearing. His preparation consists of placing a skinned mole into a well-stopped earthenware jug which is then placed in a pot of boiling water. After three hours, the jug is removed and the clear substance it contains used to treat the condition. [28 p20] John Yarwood (fl. seventeenth century) and Oswald Croll (c. 1560-1609) both commend the use of mole fat to treat deafness, with three or four drops administered into the external auditory meatus three times a day. [29 p53; 30 p45]

Epilepsy

There are several early modern treatments for the 'falling sickness' or the 'King's Evil' which involve the use of a mole as a therapeutic ingredient. Oswald Croll recommends the 'coles' of moles steeped in wine [30 p174] while John Pechey (1655-1716) recommends drinking the wine in which a mole has been boiled. [31 p215] Lancelot Coelson (1627-c.1687) restricts the therapeutically active parts of a mole to the blood, liver and heart. According to him, after drying these organs they should be reduced to a powder and then administered to a fasting patient one drachm at a time suspended in a little pine water for six successive mornings. [32 p86] A final, rather more grisly receipt is provided by the English authoress who earned her living by advising on household management, Hannah Woolley (1622-c.1675). The prescription, which relies on an astrological component to secure its effectiveness, reads as follows:

> Take a live Mole and cut the throat of it into a Glass of White wine, and presently give it to the party to drink at the New and Full of the Moon *(viz.)* the day before the New, the day of

the New, and the day after, and so at the Full. This will Cure absolutely, if the Party be not above forty years of Age. [33 p18]

Zedler suggests taking powdered mole ash together with Peony seeds (a common ingredient in anti-epileptic medicines of this period) in a little lime blossom water over a three-day period. [22 col2184]

One rather extreme remedy recorded in manuscript and dated to around 1648 is as follows:

> For a man take a she mole, & for a woman a he mole & setting by a good fire let the party put the moles Head in his mouth & biting it, sucke the blood out of the moles mouth as lively as it can, let the party set their right foot bare upon the mole, untill the blood hath don working in the body, in case it work not the first or second time, by the third time with a third mole, & if it worke at any of the 3 tryalls with him, then the drink with Gods blessing will cure him. [43 p246]

Rheumatism and arthritis

Early modern texts often refer to a condition described as 'running gout'. Also known as Arthritis vaga, this can be identified as inflammatory arthritis, a disorder of the immune system which commonly includes rheumatoid arthritis affecting the synovial lining of the joints, leading to severe pain, joint swelling, loss of function and even deformity. The usual means of treatment with mole-containing medicines involved mixing mole ash with ale or wine and drinking the mixture. [18 p78; 21 p944; 23 col793; 35 p831] John Smith (fl. 1650s) gave the additional astrological advice that this medicine should be taken 'at the decrease of the Moon'. [34 p26]

Rheumatism may be the origin of the deformities which Felix Platter has in mind when he recommends mole grease amongst a host of other ingredients as potential cures. He also gives details of a mole-containing liniment for treating deformities:

> Take of *Oyl wherein Southernwood hath boiled two ounces, of Honey one ounce, of the ashes of Mole skins and Hedghoge one dram, of the ashes of Bees and Waspes half a dram, ashes of Nut shells two scruples, Mice dung one scruple, of Bears Grease one ounce, of Labdanum three drams: mix them for a Liniment.* To which add Gallia moschata for the sent, or Musk or Oyl of Cloves. [24 p508]

Ruptures, hernias and prolapse

Johann Schroeder observes that the dried and powdered heart of a mole, especially when taken during the month of May, cures 'bursting'. [18 p78] Our understanding of this seemingly obscure condition is enlightened by Oswald Croll, who indicates that the term embraces bubonoceles (inguinal hernias, especially those where the hernial pouch forms a bubo-like swelling in the groin), enteroceles (intestinal prolapse where the ileum drops into the pelvic area, pushing against the top of the vagina and causing a bulge) and epiploceles (an omentum-containing hernia). [30 p125] He, too, commends daily doses of dried mole heart obtained from animals caught during the month of May, but suggests that the dose be given in Cinnamon Water. [30 p125]

Manget also commends dried mole heart for 'cor hernia' ('heart hernia'), which must refer to hiatus hernia, but (unusually) lists palpitations and dizziness as possible contraindications. [see also 23 col793; 22 col2184; 35 p831]

Fistula

A fistula is an abnormal tube-like connection between two hollow spaces; for example, anal fistulas develop between the anus at the end of the colon and the adjacent skin surface. First cited by the author of the *Kyranides* in the fourth century (see above), mole ash has consistently been associated with fistula treatment ever since. [e.g. 18 p78; 19 p91; 23 col793; 22 col2184; 35 p831; 45 p624] John Johnston refers specifically to the case history of Iohannes à Verlin, Consul of Gdansk (dates unknown) supposedly cured of a lacrimal fistula (a congentital condition!) by the application of mole ash.

Various swellings

Infection of the fingertip may result in a lesion known as a whitlow or felon. The infection may be bacterial or viral (often by Herpes), and the tip of the finger becomes red and swollen, is extremely painful and may develop fluid-filled blisters or, in the case of a felon, an abscess. Oswald Croll refers to this condition as a panaritium, and commends mole blood 'taken in Paper and applied to the finger much helps'; [30 p171; 19 p91] other authors also include mole skin as part of this treatment. [26 p215; 36 p137]

Robert Lovell (1630?-1690) states that mole's blood is also good against paronychia – swelling around the nail, often due to bacterial (*Staphylococcus aureus*) or fungal (*Candida albicans*) infection. [27 p92]

John Johnston observes that mole pills, taken with honey are used to treat swellings, while the 'head cut, and stamped with earth of his heaving, made up into balls, and kept in a tinne box, is given against all neck-griefs'. [19 p91] The identity of the latter condition is not entirely clear, but may refer to the scrophular 'cold abscess', a cold and painless mass growing on the side of the neck in mycobacterial cervical lymphadenitis. Schroeder, for example, indicates that ashes of mole are used in the treatment of these 'strumae'. [37 p526]

A pus-containing abscess was often referred to as an impostume in early modern times. 'Powder of a mole' was sometimes sprinkled over the abscess to bring relief. [34 p27] Lovell indicates that mole liver and the earth from mole hills helps both with impostumes and wens (swellings under the skin including sebaceous cysts). [27 p92]

Skin ulcers are open sores which are at risk of infection especially if, for some reason, blood flow to the region is limited (such as in cases of diabetes). John Pechey notes that 'a calcined Mole is much commended for cancerous, and scorbutick Ulcers' while the German alchemist Adrian von Mynsicht (1603-1638) designed a special Plaster of Mole (*Emplastrum Talpinum*) to lay on wounds and 'old stinking ulcers' claiming that 'it drys, heals, fills them with good flesh and brings them to cicatrize, drawing from them all sordid and filthy humors, though they lye deep in the flesh'. [38 p371] His recipe is as follows:

> Take May Butter without salt half a pound, green Rue and fresh roots of Solomons-seal. Boil these till the Butter appear green, then let it be strained and prest, and to the exprest Butter add yellow Wax half a pound, Ship Pitch four ounces, Oyl of Saturn an ounce, one live Mole burnt, Virgin Honey two spoonfuls, white Oats and Wheat dryed over the fire in a Frying-pan till they be black, and then pulverized, of each a handful. Of these make a Plaster.

The lack of circulation that exacerbates the effects of ulcers might also result in gangrene where the tissue becomes necrotised. Several authors commend the use of mole flesh or blood in the treatment of this condition. [21 p944] Of these, John Pechey gives brief instructions as to how the blood should be applied: 'a Paper being dipt in it [Mole's blood] and dryed, and afterwards moistened in some proper Water' whilst mole teeth are 'counted good for a Gangreen of the Paps [breasts]'. [26 p215]

Conditions in women

For problems with the breasts an anonymous sixteenth century writer is alone in recommending taking 'a Mole warpe, otherwyse called a Molle, take hym & cutte awaye his ballockes and let hym go alyue, and let her bere them in her bosom' [39 unnumbered page].

Although not utilising the body of a mole, Lancelot Coelson recommended a strange use of a mole hill to reduce excessive menstrual bleeding:

> Take the shels of new laid egges, and pill off the inner filme, boyl it one hour in water and drink that powder at twice in red wine when it is dried and beaten to powder, and at every time of drinking let her go to the newest mole-hill and put away the earth with her foot, and sit down on the place and make water in the hole so made, and during the cure let her eat Isingglass: let her use this till she be well. [32 p114]

Nicolas Lémery specifies that a scruple to a drachm of powdered mole liver should be used to 'calm hysterical vapours and post-partum pain in women who have just given birth' ('*Son foye seché & reduit en poudre, est propre pour calmer les vapeurs hysteriques & les tranchées des femmes nouvellement accouchées*'). [35 p831; see also 22 col2184]

Dental problems

The treatment of dental problems usually involved the teeth of moles. John Pechey states that mole teeth are good for treating both toothache and teething problems, while Agrippa von Nettesheim (1486?-1535) recommended using the tooth of a mole extracted from the animal whilst it was still alive, and then letting the animal go [41 p47] in a treatment for toothache. Passera indicates that rubbing the gums with mole ash and honey will stabilise loose teeth [23 col793] while Zedler intimates that the use of harvested mole teeth during teething will not only ease the pain endured during the process but also continue to protect them from toothache through the rest of their lives. [22 col2184]

Miscellaneous

A number of other conditions are listed in early modern medical literature as being candidates for treatment with preparations from moles, often as lone citations without further detail. These include goitre, [22 col2184] 'colic torture' (*colicum cruciatum*), [23 col793] fevers, [18 p78] wounds, [35 p831] fractures, [20 p48] and assisting memory and understanding. [41 p46] For the latter condition, John Gaule (1604?-1687) recommends swallowing the heart of a mole 'whilst it is yet warm with natural heat'. [42 p222]

Daniel Sennert (1572-1637) recommends the following receipt for the treatment of poisoning by snake bite: 'Take herb Cancer gathered in June an ounce and half, Ashes of a Mole an ounce, two Snakes skins make a pouder, sprinkle it often upon the part'. [40 p70]

A few authors recommend the use of a mole in order to discover whether a patient is likely to recover from an illness or to die. According to John Johnston 'Some lay a Moles-heart and Saladine, under a sick mans pillow, to know if hee shall dy, or no, conceiving that he shall recover, if he sing, or cry out; if he weep, he shall not last long'. [19 p91] John Gaule gives the same advice but indicates the Celandine and mole heart are to be laid on the head of the patient. [42 p220]

'Corrupt flesh', an otherwise imprecise term which might embrace the ulcers and abscesses considered briefly above, was also treated using powdered mole ash according to some late fourteenth century to early fifteenth century manuscripts written in Welsh and Middle English. [46 p158, 363, 364, 371] Indeed, a whole collection of ashes blended from toads, weasels, moles and adders might be combined to produce a therapeutic treatment for the condition, according to the mid-fifteenth century *Liber de diversis medicina*. [47 p76; 48 §209]

Conclusions

Although it has a well-established place in folk medicine [2] the role played by the mole as an item of materia medica in mainstream scientific medicine has not been examined before. The animal has a strong, if minor presence in early modern medical literature. The survey completed above shows that talpids were used either in their entirety or individual parts – teeth, blood, liver, skin – were harvested for use in specific therapies. In cases where the whole animal was used, the carcass was generally burnt at high temperatures and the ash rendered into a fine powder. This might be used without further adulteration, or mixed with other ingredients such as honey, the whites of eggs or various fluids (commonly waters, wine or beer) in order to aid delivery. The mole-containing receipts are mostly quite simple; the eponymous Plaster of Mole used to treat ulcers that were not healing effectively is the most complex recipe discovered during this research.

Some of the early modern uses of mole-containing medicines have their roots in the writings of classical and medieval authors, but many seem to have developed independently of any earlier tradition. Early modern usage of the mole as an item of materia medica is relatively broad embracing a wide range of conditions including leprosy, rheumatism, arthritis, epilepsy, fistulas, hernias, prolapse, teething, toothache, loose teeth,

gangrene, ulcers, whitlows, felons, paronychia, wens, goitre, excessive menstrual bleeding, post-partum pains, deafness, pain in the ears, wounds, fractures and assisting memory. It could even be employed as a means of discovering whether a patient might live or die.

Despite this wide range of applications, it is interesting to note that none of the surviving seventeenth- and eighteenth-century medical cabinets which I have examined contained any specimen of a medicinal mole. [44]

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List of Illustrations

The European Mole (*Talpa europea*) from Topsell (1658): A History of Four-footed Beasts. Author's copy.

Entry for Talpa, the mole from Cuba (1491): Ortus Sanitatis. De animalibus cap. cxxxix. Countway Medical Library, used with permission.

Rezime

Krtica (*Talpa europea*) ima dugu istoriju upotrebe kao lek u narodnoj medicini. Međutim, njena uloga kao *materia medica* u naučnoj medicini nije ranije ispitivana. Ova životinja se prilično retko pojavljuje u antičkim i srednjovekovnim zapisima, dok su se broj i raznovrsnost terapija preparatima od krtice proširili nakon renesanse. Iako neke od ranih modernih upotreba lekova koji se prave od krtice imaju svoje korene u spisima antičkih i srednjovekovnih autora, izgleda da su se mnogi od njih razvili nezavisno od bilo koje ranije tradicije. Ovo, prvo istraživanje lekova koji se prave od krtice u naučnoj medicinskoj literaturi, otkriva da su talpidi korišćeni ili u celosti, ili su pojedinačni delovi – zubi, krv, jetra, koža – sakupljani za upotrebu u specifičnim terapijama. U slučajevima kada je korišćena cela životinja, trup je uglavnom spaljivan na visokim temperaturama, a pepeo se pretvarao u fini prah. On se mogao koristiti bez daljih izmena, ili pomešan sa drugim sastojcima kao što su med, belance jaja ili razne tečnosti (obično voda, vino ili pivo) kako bi se olakšalo uzimanje. Recepti za lekove koji su se pravili od krtice su prilično jednostavni – najkompleksniji recept otkriven tokom ovog istraživanja je takozvani „gips od krtice", koji se koristio za lečenje čireva koji nisu efikasno zarastali. Istraživanje otkriva i da je rana moderna upotreba krtica kao predmeta *materia medica* bila relativno široka i da se koristila za lečenje širokog spektra stanja, uključujući lepru, reumatizam, artritis, epilepsiju, fistule, kile, prolaps, nicanje zuba, zubobolju, labave zube, gangrenu, čireve, paronihiju, gušavost, obilno menstrualno krvarenje, bolove nakon porođaja, gluvoću, bol u ušima, rane, prelome i kao pomoć pri pamćenju. Mogla se čak koristiti i kao sredstvo za otkrivanje da li će pacijent preživeti ili umreti.

References:

1. Bächtold-Stäubli H, Hoffmann-Krayer E. Handwörterbuch des deutschen Aberglaubens. Berlin: de Gruyter; 1987.

2. Hand WD. The Mole in Folk Medicine: A Survey from Indic Antiquity to Modern America. In: Hand WD (editor). Magical Medicine. The Folkloric Component of Medicine in the Folk Belief, Custom, and Ritual of the Peoples of Europe and America. Selected Essays of Wayland D. Hand. Berkeley: University of California Press; 1980.
3. Bostock J, Riley HT. The Natural History of Pliny. Volume 5. London: Henry G. Bohn; 1856.
4. Duffin CJ. A Survey of Birds and Fabulous Stones. Folklore. 2012; 123:179-197.
5. Steel C. Aristotle's Animals in the Middle Ages and Renaissance, Volume 1. Leuven: Leuven University Press; 1999.
6. Barney SA, Lewis WJ, Beach JA, Berghof O. The Etymologies of Isidore of Seville. Cambridge: Cambridge University Press; 2006.
7. Anonymous. 1685. The Magick of Kirani, King of Persia, and of Harpocration containing the magical and medicinal vertues of stones, herbes, fishes, beasts, and birds : a work much sought for by the learned but seen by few : said to have been in the Vatican-Library in Rome but not to be found there nor in all the famous libraries of the empire / now published and translated into English from a copy found in a private hand. [London]: [W. Cooper]; 1685.
8. Throop P. Hildegard von Bingen's Physica. The Complete English Translation of Her Classic Work on Health and Healing. Rochester: Healing Arts Press; 1998.
9. Duffin CJ. Lithotherapeutical research sources from antiquity to the mid-eighteenth century. In: Duffin CJ, Moody RTJ, Gardner–Thorpe C, editors. A History of Geology and Medicine. London: Geological Society of London; 2013. p. 7-43.
10. de Beauvais V. Speculum Naturale. Strassburg: The R-Printer (Adolph Rusch); 1478?.
11. de Cuba, J. Ortus Sanitatis. De Animalibus. Jacob Meydenbach: Mainz; 1491.
12. Best MR, Brightman FH. (editors). The Book of Secrets of Albertus Magnus. Of the Virtues of Herbs, Stones, and Certain Beasts, Also a Book of the Marvels of the World. Boston: Weiser Books; 1999.
13. Bartisch G. Ophthalmodouleia. Das ist Augendienst. Newer vnd wolgegründter Bericht von Ursachen vnd Erkentnüs aller Gebrechen, Schäden vnd Mängel der Augen vnd des Gesichtes, wie man solchen anfenglich mit gebürlichen mitteln begegenen, vorkommen vnd wehren, auch wie man alle solche gebresten künstlich durch Artzney, Instrument vnd Handgrieffe curiren, wircken vnd vertreiben sol [...]. Dressden: Durch Matthes Stöckel; 1583.
14. Blanchard DL. Superstitions of George Bartisch. Surv Ophthalmol. 2005; 50 (5): 490-494.
15. Kahl O. The Dispensatory of Ibn at-Tilmīḏ: Arabic Text, English Translation, Study and Glossaries. Leiden: Brill; 2007.
16. Topsell E. The history of four-footed beasts and serpents. London, Printed by E. Cotes, for G. Sawbridge at The Bible on Ludgate Hill, T.Williams at The Bible in Little Britain, and T. Johnson at The Kew in St Pauls Church-yard; 1658.
17. Culpeper, N. Cosmeticks or, the beautifying part of physick. By which all deformities of nature in men and women are corrected, age renewed, youth

prolonged, and the least impediment, from a hair to a tooth, fairly amended. With the most absolute physical rarities for all ages. Being familiar remedies, for which every one may be his own apothecary. / All extracted out of that eminent physician John Jeams Wecker, never yet extant in the English tongue before, but was promised to the world by Mr. Nic. Culpeper. London: Printed by Tho. Johnson, at the White Cock in Rood-lane; 1660.

18. Schroder J. Zoologia: or, The history of animals as they are useful in physick and chirurgery. Divided into four parts; the [brace] first treateth of the more perfect terrestrial creatures. Second third fourth of birds, fishes, insects. London: Printed by E. Coates, for R. Royston at the Angel in Ivie-lane, and Rob. Clavel, at the Stags-head near St. Gregories in St. Pauls-church-yard; 1659.
19. Jonstonus J.A description of the nature of four-footed beasts with their figures [engraven in brass]. Amsterdam: Printed for the widow of John Jacobsen Schipper, and Stephen Swart; 1678.
20. Becher JJ. Parnassus Medicinalis Illustratus. Oder: Ein neues, und dergestalt, vormahln noch nie gesehenes Thier-Kräuter- und Berg-Buch sampt der Salernischen Schul. Cum Commentario Arnoldi Villanovani, und den Praesagiis Vitae & Mortis, Hippocratis Coj; Auch gründlichem Bericht vom destilliren, purgiren, Schwitzen, Schröpffen und Aderlassen. Alles in Hoch-Teutscher Sprach, sowol in Kigatâ als Prosà, lustig und aussführlich in Vier Theilen beschrieben und mit Zwölffhundert Figuren gezieret. Ulm: Ioannis Görlini; 1663.
21. Manget J-J. Bibliotheca pharmaceutico-medica, seu rerum ad pharmaciam Galenico-chymicam spectantium thesaurus refertissimus. In quo, ordine alphabetico non omnis tantùm materia medica, historicè, physicè, chymicè ac anatomicè explicata […]. Tome 2. Genevae : Sumptibus Chouet, G. de Tournes, Cramer, Perachon, Ritter, & S. de Tournes; 1703.
22. Zedler JH. Grosses vollständiges Universal-Lexicon aller Wissenschafften und Künste […]. Volume 19. Halle & Leipzig: Johann Heinrich Zedler; 1739.
23. Passera F. Il nuovo tesoro degl'arcani farmacologici galenici, e chimici, ò spargirici. Divisa in tre libri […]. Venetia: Giouanni Parè, all' insegna della Fortuna. Con Licenza de' Superiori, e Privilegio; 1688.
24. Platter F. Platerus golden practice of physick fully and plainly discovering, I. All the kinds. II. The several causes of every disease. III. Their most proper cures, in respect to the kinds, and several causes, from whence they come. London: printed by Peter Cole, printer and book-seller, at the sign of the Printing-press in Cornhill, near the Royal Exchange; 1664.
25. Vicary T. The English-mans treasure with the true anatomie of mans body. London: B. Alsop and Tho. Favvcet; 1641.
26. Pechey J.A plain introduction to the art of physick containing the fundamentals, and necessary preliminaries to practice ... : to which is added, The materia medica contracted, and alphabetical tables of the vertues of roots, barks, woods, herbs, flowers, seeds, fruits, juices and gums ... : also a collection of choice medicines chymical and Galenical, together with a different way of making the most celebrated compositions in the apothecaries shops. London: Printed for Henry Bonwicke; 1697.

27. Lovell R. Panzooryktologia. Sive Panzoologicomineralogia. Or A compleat history of animals and minerals. Oxford: Printed by Hen: Hall, for Jos: Godwin; 1661.
28. Williams R.Physical rarities containing the most choice receipts of physick, and chyrurgerie, for the cure of all diseases incident to mans body. Being a rich jewell, kept in the cabinet of a famous doctor in this nation; stored with admirable secrets, and approved medicines. London: Printed for J.M. and are to be sold by George Calvert, at the half Moon in Watling-street neer S. Austins Gate; 1651.
29. Yarwood J. Physick refin'd, or, A little stream of medicinal marrow flowing from the bones of nature wherein several signs, particular rules, and distinct symptoms whereby the most ordinary diseases may be distinctly known, and truly judged, are perspicuously delineated. London: Printed for Tho. Passinger; 1683.
30. Croll O. Bazilica chymica, & Praxis chymiatricæ, or, Royal and practical chymistry in three treatises. London: Printed for *John Starkey* at the *Mitre* in *Fleetstreet* near *Temple-Bar,* and *Thomas Passinger* at the *Three Bibles* on *London-Bridge*; 1670.
31. Pechey J.A plain introduction to the art of physick containing the fundamentals, and necessary preliminaries to practice. London: Printed for Henry Bonwicke; 1697.
32. Coelson L. The poor-mans physician and chyrurgion, containing above three hundred rare and choice receipts, for the cure of all distempers, both inward and outward: together with necessary considerations before purgation; easie rules for the opening of a vein, and the manner of bleeding by horse-leeches, with a method for drawing teeth. London: Printed by A.M. for Simon Miller at the Starre in St Pauls Church-yard; 1656.
33. Woolley H. A supplement to The queen-like closet, or, A little of everything presented to all ingenious ladies, and gentlewomen. London: Printed by T.R. for Richard Lownds, and are to be Sold at the Sign of the White Lion in Duck-Lane; 1674.
34. Smith J. A compleat practice of physick. Wherein is plainly described, the nature, causes, differences, and signs, of all diseases in the body of man. With the choicest cures for the same. London: Printed by J. Streater, for Simon Miller at the Star in S. Pauls Church-yard; 1656.
35. Lémery N. Dictionnaire Universel des Drogues Simples. Paris: d'Houry, au bas de la rue de la Harpe, au St Esprit; 1733.
36. Thomson G. Ortho-methodoz itro-chymikē: or the direct method of curing chymically Wherein is conteined the original matter, and principal agent of all natural bodies. London: printed for B. Billingsley at the Printing-press in Cornhill, & S. Crouch at the upper end of Popes-Head-Alley; 1675.
37. Schroeder J. The compleat chymical dispensatory in five books treating of all sorts of metals, precious stones and minerals, of all vegetables and animals and things that are taken from them, as musk, civet, & c., how rightly to know them and how they are to be used in physick, with their several doses : the like work never extant before : being very proper for all merchants, druggists, chirurgions

and apothecaries, and such ingenious persons as study physick or philosophy. London: Printed by John Darby for Richard Clavell; 1669.
38. Mynsicht A. Thesaurus & armamentarium medico-chymicum, or, A treasury of physick with the most secret way of preparing remedies against all diseases. London: Printed by J.M. for Awnsham Churchill; 1682.
39. Anonymous. Here begynneth the seynge of urynes, of all the colours that uryns be of with medycynes annexed to euery uryne, [and] euery uryne his urynall, not imprynted in englysshe before this tyme, moche profytable for euery man to knowe. London: Imprynted by [J. Rastell for] me Rycharde Banckes dwellynge in London in the Pultry, a lytell fro ye stockes, at the lo[n]ge shoppe by saynt Myldredes churche dore; 1525.
40. Sennert D. The sixth book of Practical physick Of occult or hidden diseases; in nine parts. London: printed by Peter Cole, printer and bookseller, at the sign of the Printing-press in Cornhill, near the Royal Exchange; 1662.
41. Agrippa von Nettesheim HC. Three books of occult philosophy written by Henry Cornelius Agrippa of Nettesheim. London: Printed by R.W. for Gregory Moule; 1651.
42. Gaule J. A collection out of the best approved authors containing histories of visions, apparitions, prophesies, spirits, divinations and other wonderful illusions of the devil wrought by magic or otherwise: also of divers astrological predictions shewing as the wickedness of the former, so the vanity of the latter, and the folly of trusting to them.
43. Knight K. A Precious Medicine: Tradition and Magic in some Seventeenth-Century Household Remedies. Folklore. 2002; 113: 237-259, London: Printed for Joshua Kirton; 1657.
44. Duffin CJ. British Eighteenth Century Materia Medica Collections. In Polyakova IA, Duffin CJ & Suvorova TJ (eds.): Collection in the Space of Culture. Kaliningrad: Kaliningrad Regional Amber Museum; 2019: 105-125.
45. Lonicer A. Kreuterbuch, künstliche Conterfeytunge der Bäume, Stauden, Hecken, Kreuter, Getreyde, Gewürtze. Ulm: Matthaus Wagner; 1679.
46. Luft, D. Medieval Welsh Medical Texts. Volume One: The Recipes. Cardiff: University of Wales Press; 2021.
47. Ogden, M.S. (ed). The 'Liber de Diversis Medicinis'. London: Oxford University Press for EETS; 1938.
48. Lewis, T. (ed.). A Welsh Leech Book, or Llyfr o Feddyginiaeth. Liverpool: D. Salesbury Hughes; 1914.

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