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Edited by  
Z. Füsün ERTUĞ

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## Herbal folk remedies for animal health in the Netherlands

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As a part of their training in herbalism 85 students of the two private schools for natural animal care that exist in the Netherlands were given the assignment to ask farmers, pet owners and animal pension keepers about their traditional remedies. This led to 168 case reports in the period 1998-2004. A few reports from other sources were added and all results have been put in a database to make follow up analyses possible. The animals that were involved were often horses. The plant species involved consisted of 63 genera in 36 families of which 92% were indigenous to, or have been grown in the Netherlands for many years. The most frequently reported plant was *Linum usitatissimum* L., flax seeds. Next in line were *Urtica urens* L. and *U. dioica* L. (nettles) and *Allium sativum* L. (garlic). All three were used for several different health conditions in several species of animals. Besides traditional internal and external herbal remedies there was use of beer, gin, tobacco, vinegar, and the hanging of branches in stables.

**Key words:** *Linum usitatissimum*, ethnoveterinary, herbal folk remedies, horse treatment, Netherlands

Ethnoveterinary practice in the Netherlands as defined by Martin, Mathias and McCorkle (2001) was, until recently, almost completely restricted to folk medicine, as there were hardly any professional natural health animal practitioners in the past. But since 1998 there are two private schools for the natural health care of animals. In these schools herbalism is taught. Also at this moment the commercial market of herbal remedies for pets is growing rapidly. It was feared that the old traditions would be lost within a few decades. Finding it essential that the old knowledge be preserved, the compilation of these data was undertaken. The results of our field work were put in a database to enable follow up analyses and study. The remedies are not yet tested for safety and effectiveness. We hope to evaluate some remedies that appear to be safe and promising.

### Method

In the period between 1998-2004 as a part of their training in herbalism, 85 students from two natural animal healthcare schools were assigned to

interview farmers, animal owners or animal pension keepers in their vicinity, asking them for their traditional remedies, whether from the past or still in use. Any herbal or food based remedy, as long as its main component was of botanical origin, would do. For the purpose of training, students had to evaluate the remedies. They had to return with a report concerning at least two such remedies. For this project we used a semistructured questionnaire. The report had to include, the remedies (they had to find out exactly what is used, how, when, and pay attention to the identification, preparation, and the dosage), the informant and the primary source (who told you about it and how did they find out), the informants experience concerning this remedy (positive/negative) and the student's opinion on the plausibility of its effectiveness and the toxic risks involved.

### Results

We received reports from 85 students and two other sources covering 173 case reports, including 63 plant genera (68 plant species).

**Table 1.** Ethnoveterinary recipes reported to the Netherlands Institute for Ethnobotany and Zoopharmacognosy (IEZ) 1998-2004 sorted to animal species

Species	No	%
Horses	81	46
Cows	25	14
Dogs	19	11
Birds (pigeons, chickens, turkeys, budgies)	11	6
Sheep	10	6
Goats	9	5
Rabbits	7	4
Cats	6	3
Pigs	4	2
Others	4	2
Sum	176	100

## Animals

In the case reports we received between 1998 and 2004 the animals involved most frequently were horses (Table 1). This is not surprising as most of the students are horse owners and some are professionals involved in horse breeding or keeping. So the results may be biased in this respect. Cows are second, then dogs. There are only a few remedies for pigs; our contact with the association of biological pig farmers confirmed that their members hardly use herbs.

## Remedies

The plant species involved consisted of 68 species (63 genera) in 36 families of which 92% were

indigenous to, or have been grown for many years in the Netherlands. Apart from nettles, there was hardly any harvesting from the wild. The eight remedies mentioned most often are listed in Table 2.

The most frequently reported plant (20 times) was *Linum usitatissimum*, flax seeds. It is used for a range of different health conditions but mainly for skin and digestive problems in horses and cows. In two cases it was used for sheep. Many of the users are enthusiastic about the influence these seeds have on moulting, but they added a warning for boiling the seeds before use to neutralize the Prussic acid (HCN). Also in some cases only the mucous was used and the seeds were left behind.

Several studies have been conducted in Canada on the feeding of flaxseed to dairy cows. This can have a positive influence on the milk quality (Gonthier et al. 2004, 2005; Lessard, Gagnon, and Petit 2003; Petit 2002; Petit Germiquet and Lebel 2004, 2005; Soita et al. 2003). Also the beneficial influence of flaxseed on the skin of atopic horses has been confirmed by a Canadian clinical study (O'Neill, McKee, and Clarke 2002). In the Netherlands flaxseed is part of calve and piglet food, and of some types of horses foods. It is not a part of the normal food for cows or pigs.

The second most popular plant (mentioned in 15 reports) is the nettle. Two *Urtica* species, *U. dioica* and *U. urens* are available in the Netherlands, and they are both being used. These are among the few plants that is collected from the wild. The use is very broad; it is used for all animal species. General strength-improvement and recovery is mostly the objective. One interesting

**Table 2.** Eight plant genera most involved in 168 ethnoveterinary recipes reported to IEZ 1998-2004 (exact reported number of recipes with the genera between brackets)

Genus; species	(nr)	Plant parts	Animals	Health problem examples
<i>Allium sativum</i>	(11)	cloves	horse, dog, chicken	worms, cough, insect repellent, general health
<i>Calendula officinalis</i>	(6)	flower, herb	dog, cat, horse, sheep, guinea-pig	externum on wounds
<i>Linum usitatissimum</i>	(20)	seed	horse, cow, sheep	improving moulting; on wounds; prevent colic
<i>Matricaria chamomilla</i>	(9)	flower	horse, dog, cat, ferret	external for prevention eye infection, cough
<i>Mentha</i> species	(6)	leaves	horse, cow, goat, rabbit	colic, scour, hard udder
<i>Taraxacum officinalis</i>	(8)	herb, root	rabbit, horse, dog, pigeon	general health improvement
<i>Trigonella foenum graecum</i>	(5)	seed	horse	cough
<i>Urtica dioica/urens</i>	(15)	herb	horse, chicken, turkey, pig, cow, goat	regaining strength and stimulating milk after delivery; roborans

practice was to rub the leaf on sow's nipples: the burning sting would make her allow the piglets to suckle more easily. We also think that the internal use of the nettle around the period of delivery is a case that deserves more research.

The third plant, reported 11 times, was garlic. *Allium sativum* seems to be a world wide remedy that was reported several times for ethnoveterinary use at conferences in India (Mathias, Rangnekar, and McCorcle 1998), Italy (Pieroni 1999) and in case studies in Trinidad and Tobago (Lans 1996). This is not an indigenous plant in the Netherlands but it is cultivated on a small scale. A lot of the reports concern commercial preparations that are being sold for horses. We expect a few accidents to happen soon, because the market for these animal herbal products is booming at the moment, and there is not enough traditional herbal knowledge left among animal owners to resist the advertisements. It is known that garlic in large quantities or its chronic use can do harm to cattle and horses (Miyazawa, Ito, and Ohsaki 1991; Parton 2000; Pearson et al. 2005). It is also known that garlic's aromatic compounds pass the ovine placental barrier (Nolte et al. 1992).

The rather popular human remedies *Calendula officinalis* L. and *Matricaria chamomilla* L. were

mentioned only for external applications. Other popular plants were several mint species with several different applications and *Trigonella foenum-graecum* L. (Greek hay). This is another herb strongly promoted by the commercial animal herbal industry, for cough mostly.

Students reported ethnoveterinary uses of beer, gin, sugar, molasses, hay, vinegar and several grains (barley, wheat).

### Application

Reported uses were mostly internal, in 20% of the reports external, and there were two enema's noted. To summarize the treatments involved we have grouped them according to the Anatomical Therapeutical Chemical Veterinary Classification system (WHO 2005) of which we use only the main therapeutic groups (Table 3). The remedies that were reported most often were alimentary tract and metabolism treatments (QA) and dermatologicals (QD); both equally frequent. Respiratory (QR), anti parasitic (QP) and reproductive treatments (QG) are also common. There was only one cardiac remedy mentioned (QC); this was *Crataegus laevigata* (Poir) DC (hawthorn), sold as a commercial preparation for humans.

**Table 3.** Indications involved in the ethnoveterinary recipes reported to IEZ 1998-2004, sorted to ATCvet code (WHO 2005)

ATCvet	Nr	%	Examples
QA	44	23	To prevent/cure colic Linum, Mentha, beer and tobacco are used; for scour Acorus, Calendula Mentha, Potentilla, Quercus, parsley, blueberry's, black tea, oat slime and a hay extract.
QB	3	1,5	Garlic, Urtica and Taraxacum are given to cleanse the blood.
QC	1	0,5	Crataegus tincture was given to a dog with a weak heart.
QD	43	22	Linum was often used for the moulting season; on wounds: Linum, Plantago, Calendula, Matricaria or cabbage is used; on stings: potato, malva, plantago; on warts: molasses.
QG	19	10	Urtica and Taraxacum to stimulate lactation; Linum (mucous) and beer to cure milk fever.
QI	6	3	Taraxacum and Rumex to stimulate immune system.
QM	4	2	For leg oedema in horses Juniperus, Apium & Solidago; Arnica (ext), salix, Filipendula for aches.
QN	2	1	Gin for pigs and for horses; a Valeriana/Humulus/ Hypericum mixture as a tranquillizer.
QP	25	13	Garlic, Artemisia absinthum and Tanacetum vulg. used as insecticide or-repellant or vermicide.
QR	17	9	Cough in goats: Mentha, Salvia; in horses: often Trigonella seeds, also Apium, dry peas.
QS	9	4	Infected eyes (dog, cat, horse) treated ext. preventive and curative with Matricaria or Euphrasia.
QV	21	11	General health was improved by feeding Urtica and Taraxacum to several animal species.
<b>Sum</b>	<b>194</b>	<b>100</b>	<b>(some remedies are placed in two ATC groups)</b>

**Table 4.** Sources and assessment by interviewees of ethnoveterinary recipes reported to IEZ 1998-2004

SOURCE	nr (percentage)
Companion animal owner (family remedy without primary source)	45 (26%)
Farmers and shepherds	58 (34%)
Breeders/ pensions/ stables/ riding schools/ petting zoos/ shoeing-smiths	49 (28%)
Veterinary physicians	8 (5%)
Human herbalists or naturopaths	5 (3%)
Popular magazines/ animal food supplement sellers	7 (4%)
<b>RESULTS (assessed by interviewees)</b>	
Good (very, mostly)	146 (86%)
Satisfactory/reasonable	8 (5%)
Insufficient/non-effective	3 (2%)
Inconclusive or irrelevant	15 (7%)
<b>Still in use?</b>	
Yes	130 (75%)
Modified	6 (4%)
No	27 (21%)

### Sources of the informants

As there are only two of these schools in the Netherlands, students came from all parts of the country as did their interviewees. Besides the owners and animal-care professionals (like breeders), older farmers and a few vets were often important sources for remedies (Table 4). When the informant took the remedy from a book, it was often a Herbal meant for human use. In three cases there was reference to a specific animal Herbal, all three were mid 19<sup>th</sup> century books (Jolij 1855; Numan 1844; Wagenfeld 1844). The interviewees considered 91% of the remedies to be good or satisfactory. 79% of the remedies are still in use, although some traditional preparations have been replaced by a commercial one, usually due to lack of time for gathering and preparing the herb.

### Illustration of some specifics

- Quite often cattle or horses are given a bottle of beer. It is said to give a shiny coat (in horses) or improve digestion, it would prevent colic, and even the feared milk disease in cows (a prolonged weakness after delivery) could benefit from this.
- Some remedies have a zoopharmacognostic origin. One woman made a digestive tea from some herbs for herself. Her cat came and drank from it, whereas she normally didn't do this. The event was repeated a few times and the woman noticed an improvement in the cat's appetite. Also the cat's chronic vomiting and diarrhea ceased. The remedy was also effective on the rare occasions the digestive problems returned in later years.
- Shepherds had been noticing that animals tended to eat dandelion flowers, plantain, or burdock leaves when they were weak. They brought them to a place where these plants were available to them when they felt the animals needed it.
- One old farmer told a student that his family had a field with a lot of *Equisetum arvense* L. (horsetail) in it. It was family-knowledge, that when animals grazed there, they would grow big horns and thick fur, but would have no meat on the bones. The hay from this field was kept separate and given to cows suffering from mycosis of the skin.

- Fennel seeds (seeds of *Foeniculum vulgare* Mill.) are used in many countries by mothers (as a galactagogue) and for babies (for cramp soothing). We had a report on its usage on dogs; in Italy it was reported for cattle. At this moment 6 organic pig farms in the Netherlands are testing this remedy to see if it improves the health of their sows and piglets.
- One farmer mentioned an old practice in case of colic. They let the horse smoke tobacco through a pipe in its anus. This is now an outdated practice.
- Another interesting practice is the hanging of holly-branches (*Ilex aquifolium* L.) in the sheep-stable to prevent or cure ecthyma disease. This was reported twice, once by a sheep farm in the south and once by a goat farm in the north. This use seems to have a broader counterpart in France (Brisebarre 1996).

## Discussion

During the last decade, there have been many studies on ethnoveterinary practices in Europe. This makes it possible to compare our results to others (Table 5). Allen and Hatfield (2004) recently compiled a survey of medicinal plants from British and Irish folk traditions. They presented 105 genera of vascular plants that were used to treat animals. Of these we share 23 genera with them, though they are often applied differently. For example, although the English name for *Artemisia absinthium* L. is wormwood, and we found two reports of its use against worms in the Netherlands, Allen and Hatfield only report the use for cuts on cow's

udders. Likewise we found that of the 23 genera only 7 were used in a more or less similar way.

A study of Agelet and Vallès (1999) in Spain mentioned 76 remedies, of which we shared 20, and again the indications are quite different there. With the study of Uncini Manganelli, Camangi, and Tomei (2001) in Tuscany we share few remedies, but of the ones we do share, at least one of the indications is quite often similar. This was lesser the case for the survey Pieroni et al. (2004) conducted in the south of Italy.

There are many commonalities between the remedies we found in the Netherlands and the herbal remedies reported for Austria (Ludwig 1996; Zitterl-Egelseer and Franz 1999). Lans and Mathias (2004) recently edited a report on ethnoveterinary remedies in British Colombia. The use of *Calendula* for skin lesions and the use of *Taraxacum* as a blood purifier were found in both countries. *Trigonella* was only reported for respiratory illness in the Netherlands, and was used for skin conditions in British Colombia. *Urtica* is often used in the Netherlands to cure lactation problems and general diseases, whereas it is a part of anti rheumatic recipes in British Colombia. But there is a great amount of commonalities between the remedies we had reported and the Canadian report; this may be related to the fact that many Dutch farmers have moved to Canada in the decade after the 2<sup>nd</sup> world war.

There are three popular 20<sup>th</sup> century Dutch publications on animal healthcare with herbs. A popular book was written by Mrs. K. Rotstein-van den Brink (1991). She mentions many more eye-remedies than we found; some of her cough and skin

**Table 5.** Plant genera used for ethnoveterinary practice in the Netherlands compared to genera reported by other recent studies

	Nr genera	shared	indication shared
This study	63		
UK/Ireland (Allen and Hatfield 2004)	105	23	7 (30%)
Spain Catalonia (Agelet and Vallès 1999)	76	20	8 (40%)
Italy Tuscany (Uncini Manganelli et al. 2001)	77	14	9 (64%)
Italy South (Pieroni et al. 2004)	55	10	5 (50%)
Austria dairy (Ludwig 1996)	37	22	13 (59%)
NL dairy (Groot 2003)	7	7	4 (57%)
Canada British Col. (Lans 2004)	195	38	14 (37%)

remedies are similar to ours. We heard first hand that a lot of her 'traditional home remedies' were taken from the books of a naturopath who lived nearby her. Also in the Netherlands a translation of De Bairaclı Levy's book (1960) has been available from the 1950's onwards. We found that from the 63 genus we reported, 47 were also mentioned in the Bairaclı's book (this book mentions 205 herbal remedies). Of these 47 remedies, 19 had a very different indication in the book, and 7 a slightly different indication so there were 21 commonalities (45%). The Reader's Digest herbal guide was translated into Dutch under supervision of professor Van Os (1980). It contains a chapter on veterinary remedies written by the Dutch vet J.C. Bottelier. We found almost nothing that was similar to these recipe's still in use. Our sources mention none of these three books. But three older (19<sup>th</sup> century) books on animal care were mentioned to

have been of family use and were presented (Jolij 1855; Numan 1844; Wagenfeld 1844).

Some remedies stem from human oriented textbooks. There is similarity between the remedies mentioned here and the remedies in popular Dutch herbals which were summarised on an earlier occasion (Van Asseldonk 2001). However the popularity of flax seeds and Greek hay seeds appears to be rather specific for animals, whereas several very popular herbs for humans (*Hypericum perforatum*, *Valeriana officinalis*, *Achillea millefolium*, *Alchemilla vulgaris*, *Melissa officinalis*) were not reported for animal use in this study.

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### Literature Cited

- Agelet A., and J. Vallès.** 1999. Vascular plants used in ethnoveterinary in Pallars (Pyrenees, Catalonia, Iberian Peninsula). Pages 14-35 in A. Pieroni ed., Herbs, humans and animals/*Erbe, Uomini E Bestie*. Experiences, Köln.
- Allen, D.E., and G. Hatfield.** 2004. Medicinal Plants in Folk Tradition, an ethnobotany of Britain and Ireland. Timber Press, Portland/Cambridge.
- Brisebarre, A.** 1996. Tradition and Modernity: French Shepherd's use of Medicinal Bouquets. Pages 76-90 in M.C. McCorkle, E. Mathias and T. Schillhorn van Veen eds., Ethnoveterinary research and development. IT, London.
- De Bairaclı Levy, J.** 1960. Kruidengeneeskunde voor dieren. Driehoek, Amsterdam.
- Gonthier, C., A.F. Mustafa, R. Berthiaume, H.V. Petit, R. Martineau, D.R. Ouellet.** 2004. Effects of feeding micronized and extruded flaxseed on ruminal fermentation and nutrient utilization by dairy cows, *Journal of Dairy Science* 87(6):1854-62.
- , ———, **D.R. Ouellet, P.Y. Chouinard, R. Berthiaume, H.V. Petit.** 2005. Effects of feeding micronized and extruded flaxseed on ruminal fermentation and nutrient utilization by dairy cows, *Journal of Dairy Science* 88(2):748-56.
- Groot, M.J.** 2003. Deskstudie alternatieve gezondheidszorg voor melkvee. RIKILT UR, Wageningen.
- Jolij, J.** 1855. Gemakkelijk huisboekje voor den landman, van vijftig geneesmiddelen voor koeijen, waarvan vele bij proefondervinding zijn goed bevonden. Zutphen.
- Lans, C.** 1996. Ethnoveterinary Practices used by livestock keepers in Trinidad and Tobago. Thesis, WUR Wageningen.
- , and **E. Mathias**, ed. 2004. Manual ethnoveterinary medicines used in British Columbia, Canada. Available on <http://bcics.uvic.ca/bcethnovet>
- Lessard, M., N. Gagnon, and H.V. Petit.** 2003. Immune response of postpartum dairy cows fed flaxseed, *Journal of Dairy Science* 86(8):2647-57.
- Ludwig, M.** 1996. Phytotherapie beim Rind einst und jetzt – alte Indikationen neu bewertet. Dissertation, Wien.
- Martin, M., E. Mathias and C.M. McCorkle.** 2001. Ethnoveterinary Medicine. An Annotated Bibliography of Community Animal Healthcare. ITDG, London.
- Mathias, E., D.V. Rangnekar and C.M. McCorcle** eds. 1998. Ethnoveterinary medicine: Alternatives for livestock development-proceedings of an international conference held in Pune, India, 4-6 November 1997. BAIF Development Research Foundation, Puna.
- Miyazawa, K., M. Ito, and K. Ohsaki.** 1991. An equine case of urticaria associated with dry garlic feeding, *The Journal of Veterinary Medical Science* 53(4):747-8.
- Nolte, D.L., F.D. Provenza, R. Callan, and K.E. Panter.** 1992. Garlic in the ovine fetal environment, *Physiology and Behaviour* 52(6):1091-3.
- Numan, A.** 1844. Handboek der genees- en verloskunde van het vee. Utrecht.



- O'Neill, W., S. McKee and A.F. Clarke.** 2002. Flaxseed (*Linum usitatissimum*) supplementation associated with reduces skin test lesional area in horses with Culicoides hypersensitivity, Canadian Journal of Veterinary Research 66(4):272-7.
- Parton, K.** 2000. Onion toxicity in farmed animals. New Zealand Veterinary Journal 48(3):89.
- Pearson, W., H.J. Boermans, W.J. Bettger, B.W. McBride, M.I. Lindinger.** 2005. Association of maximum voluntary dietary intake of freeze-dried garlic with Heinz body anemia in horses, American Journal of Veterinary Res 66(3):457-65.
- Petit, H.V.** 2002. Digestion, milk production, milk composition, and blood composition of dairy cows fed whole flaxseed, Journal of Dairy Science 85(6): 1482-90.
- , **C. Germiquet, and D. Lebel.** 2004. Effect of feeding whole, unprocessed sunflower seeds and flaxseed on milk production, milk composition, and prostaglandin secretion in dairy cows, Journal of Dairy Science 87(11):3889-98.
- , **M. Ivan, and P.S. Mir.** 2005. Effects of flaxseed on protein requirements and N excretion of dairy cows fed diets with two protein concentrations, Journal of Dairy Science 88(5):1755-64.
- Pieroni, A.** ed. 1999. Herbs, humans and animals/*Erbe, Uomini E Bestie*. E<sup>x</sup>periences, Köln.
- , **P. Howard, G. Volpato, and R.F. Santoro.** 2004. Natural Remedies and Nutraceuticals Used in Ethnoveterinary Practices in Inland Southern Italy, Veterinary Research Communications 28:55-80.
- Rotstein-van den Brink, K.** 1991. Duizend dierendingen. Kok, Kampen.
- Soita, H.W., J.A. Meier, M. Fehr, P. Yu, D.A. Christensen, J.J. McKinon, and A.F. Mustafa.** 2003. Effects of flaxseed supplementation on milk production, milk fatty acid composition and nutrient utilization by lactating dairy cows, Archiv für Tierernährung 57(2):107-16.
- Uncini Manganelli, R.E., F. Camangi, and P.E. Tomei.** 2001. Curing animals with plants: traditional usage in Tuscany (Italy), Journal of Ethnopharmacology 78:171-91.
- Van Asseldonk, A.G.M.** 2001. Traditional and modern herbalism in the Netherlands. Research report presented as a short paper at the ethnobotany conference in Antigua, Guatemala Sept. 14-18 2001. IEZ, Beek-Ubbergen.
- Van Os, F.H.L.** ed. 1980. Gids voor geneeskrachtige planten. Reader's Digest NV, Amsterdam.
- Wagenfeld, dr L.** 1844. De Vakbekwame Veearts.
- WHO.** 2005. About the ATCvet classification system. Available on [http://www.whocc.no/atcvet/about\\_atcvet.html](http://www.whocc.no/atcvet/about_atcvet.html)
- Zitterl-Egelseer, K., and C. Franz.** 1999. Medicinal herbs of Central Europe used in the therapy of different animal species. Pages 187-195 in A. Pieroni ed., Herbs, humans and animals/*Erbe, Uomini E Bestie*. E<sup>x</sup>periences, Köln.