Traditional methods for the treatment of animal diseases in Croatia

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Summary: Traditional methods of treatment for animal diseases, particularly non-infectious diseases, occupy a special place in the history of the Croatian veterinary profession. The use of medicinal herbs in the treatment of various diseases has been described in a large number of publications. Folk medicine also frequently contains an element of magical practices, as well as the use of animal and plant matter and minerals. Dreckapotecke (so-called 'dirty' medicines and 'dirty' pharmacy) also formed part of healing practice in the 17th and 18th centuries.

In the veterinary ljekarušas (collections of early medical texts), the best recommendations relate to surgical interventions; few instructions were given for the treatment of parasitic and internal ailments, even fewer for obstetrical problems and infectious diseases. In folk medicine, there existed some harmful treatment methods, and a number of indifferent medicaments were in use. In most cases, the value of the treatment applied was dubious. However, since the very beginning of the 'empirical' phase of the fight against disease, a number of relatively effective practices from folk medicine have been adapted and introduced into scientific medicinal praxis.

KEYWORDS: Croatia – Herbal medicine – History – Traditional medicine – Veterinary medicine.

INTRODUCTION

The development of the natural sciences has greatly contributed to both human and veterinary medicine, especially with regard to the prevention and treatment of various human and animal diseases. Science has clarified the aetiology of disease and the cause of death, enabling the discovery of methods for the protection of human and animal health. However, in some isolated areas, superstition and traditional healing practices for humans and livestock have not been completely eradicated.

Traditional veterinary medicine commenced with the use of mystical and religious/mystical rituals for healing, and continued with the application of medicinal herbs. Popular medical knowledge was preserved in ljekarušas (ancient records containing instructions for healing humans and livestock). The earliest examples were written down by priests in monasteries. In Croatia, for several centuries, Franciscan Friars gradually gathered instructions for healing humans and livestock, complementing these with personal experiences and similar records found in other countries. In some of

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these ancient records, instructions for the healing of humans and animals are presented separately, while in others no such differentiation is made.

The *ljekarušas* which contain instructions for the healing of animals most often concern the treatment of horse diseases. These accounts contain a considerable amount of superstition, in the form of magical and religious/magical instructions, but may also include instructions for the application of medicinal herbs.

A comparison of the contents of the available ancient records reveals the great similarities in traditional methods of combating disease; often, the same kinds of herbs are recommended for use.

The most frequently occurring instructions for the treatment of non-contagious and infectious livestock diseases are described below.

**INSTRUCTIONS FOR THE TREATMENT OF NON-CONTAGIOUS DISEASES OF HORSES**

In the surviving ancient records, diseases affecting the motor system are often mentioned. These include a skin disease called *kertica* or *keržica*, which attacks the legs of horses (usually the distal parts of the legs). One recommended treatment for this disease involved mixing the root of *Urospermum picioides* with oats, and applying this to the affected parts. As an alternative treatment, the affected areas could be coated with the ash obtained by burning lentil grains (*Lens culinarus* L.) (21).

The use of the *U. picioides* root most probably had no effect on the scabs and wounds on the legs, while dusting with herbal ashes may have had a beneficial effect.

Another, completely magical remedy against *kertica* is described in the *ljekarušas* (26): a thread, spun by a girl who has never spun before, must be wound around a piece of wood originating from a human grave. This should then be tied to the mane of the affected horse. At the same time, a piece of the rope by which a man has been hanged is to be tied to the tail of the horse.

Such magical rituals were certainly devoid of therapeutic effect.

Traumatic exostoses on the legs of horses occurred frequently. In the ancient records, such an injury is described as 'dead bone'. To heal such a growth, it was recommended that a blend of salt and heated stale leaf-lard (made from the layer of fat around pig kidneys) be applied (21). This type of injury could also be treated by tying a piece of garlic (*Allium sativum* L.) to a 'dead bone' for three days during the period of the new moon (26).

Application of the salt and hot leaf-lard mixture would provoke local inflammation, and therefore constituted rational advice. However, care was required to avoid touching the sinews of the animal with the hot mixture. The use of garlic is very frequent in traditional veterinary medicine, as well as mention of the phases of the moon. However, neither of these instructions could have had any healing effect.

For the treatment of a 'hobnailed horse' (injured during shoeing by a wrongly-hammered nail), the recommendation was to make an opening in the hoof at the injured spot, then to place on the wound a piece of felt from an old hat which had been dipped in
wheel grease, and finally to nail the horseshoe over this. Such an injury was also treated by tying to the hoof a quantity of millet (*Panicum milliaceum* L.) boiled in oil (21).

Both of these pieces of advice were useful and were frequently repeated in the veterinary literature.

If a horse became overfed with oats, the recommendation was to insert into the anus a piece of soap as long as a finger, or to apply other laxative treatments, such as pouring liquid soap or a handful of salt dissolved in human urine into the mouth of the animal (21).

The use of soap as a laxative is a very simple, well-known and useful measure.

In the early veterinary literature, ‘white eye’ was a term commonly used to designate several distinct eye conditions in horses (keratitis, corneal ulcer, cataract, etc.). Such ailments were treated by blowing various powders into the eyes of the animal: for example, pulverised corn cockle (*Agrostemma githago* L.) or devil’s grass (*Aconitum napellus* L.), crushed oyster shell or crushed snail shell (21).

Other healing methods were also applied. For example, an ointment made of honey and grease from a quail (*Phasianidae*), or a mixture of cream and ashes from young willow (*Salix alba* L.) was applied to the eye (21).

For a horse suffering from ‘white eye’, Medić (25) recommended the application of a powder made from roasted and crushed snail, ginger and copper sulphate. Similar instructions can also be found for the treatment of the ‘eye-pain sorcery’ disease.

All the above medicines are harmful and their content is reminiscent of the ancient collyria. Nevertheless, similar medicines were still recommended at the beginning of the 19th century by scientifically-educated veterinarians.

It was recommended that a horse infested with worms or *kerć* or *keršelj* (the term indicates some kind of intestinal parasite, but may also mean simply ‘spasm’), be fed with dried ‘Bush of God’ (*Artemisia abrotanum* L.); alternatively, a mixture of garlic and wine may be drenched. Another treatment was to mix lentils and powdered corn cockle into the feed (21).

The use of the leaves and flowers of *A. abrotanum* was beneficial, as this plant is known to have an anthelmintic effect. However, the efficacity of the other methods of treatment described is uncertain.

Various instructions were given for the treatment of anuria in horses. The air-bladder of a herring (*Clupea harengus* L.) should be fed to the horse with bread or *A. abrotanum*. Also, it was considered advisable to ride the sick horse until the animal broke into a sweat, or to take the horse into a sheep-fold and leave it there for some time (21).

One of the instructions for a horse suffering from anuria recommended placing a louse under the foreskin of the animal (26). Yet another recommendation was to girth the horse with a band of hair from a camel, or to feed the animal ‘sea dust’ between meals (26).

The use of the air-bladder of a herring is actually an example of sympathetic magic (application of the bladder in the case of bladder disorder; water creature in the case of retention of water, etc.). The use of *A. abrotanum* may have been beneficial. Placing a louse under the foreskin can be considered as an attempt to irritate the horse and provoke urination, and a similar effect would be expected from the stench in the sheep-
fold. Girthening the horse with camel hair was a form of magical practice. The ‘sea dust’ mentioned is believed to have been pulverised fish bone (*Sepia officinalis*).

For a horse which injured a ‘cord’ (leg sinew), the recommendation was to fry fresh swine faeces in butter, together with onion (*Allium cepa* L.). This was then placed on a cloth and, while still warm, tied to the affected area for three days. The affected part was then to be washed using a solution of alum in distilled wine (21). Another instruction was to recite a prayer while dragging the hand downwards along the injured sinew (26).

The use of animal faeces is a typical folk remedy for bruising in both human and veterinary medicine. This is an example of so-called ‘dirty pharmacy’. The remedy was efficacious, but there was always a possibility of secondary infection which would certainly aggravate the condition. In folk medicine, onion is often used to dress festering wounds. Styptics or alum were often used to dust wounds or as a solution for washing, due to the strong astringent effect and an ability to stop bleeding and accelerate scar formation. Distilled wine is still used in folk medicine today, as this dissolves and removes necrotic tissue, while serving as a mild disinfectant. The recommendation related to prayer is strictly religious/magical.

It was recommended that wounds on the back of a horse be bathed with buckwater or salty water and dusted with a dried mixture of crushed egg-shell, lime and vinegar (21). This is a typical prescription for the treatment of festering wounds in both human and veterinary folk medicine. However, this remedy could not have been useful in this case, as wounds to the back of a horse require more radical surgical intervention (incision and drainage).

Infestations of lice in horses were treated by using a mixture of vinegar and egg-white poured over mercury (21).

Mercury acetate is frequently mentioned in the ancient literature as a remedy against pediculosis. This may have been beneficial, but there was always a possibility of intoxication.

When the hoof of a horse was easily damaged, it was recommended that this be treated with a compress made from eggs and honey (21). However, it is unlikely that such a treatment achieved any success.

If the hoof was ‘drying up’ (it is unclear exactly what was meant by this term, but it probably covered a number of disorders) or was distorted, the recommendation was to ride the horse over ground covered by hard, slippery frost, or to smear the limbs of the animal with an ointment prepared from the four legs of a cow cut into small pieces and cooked until forming a jelly (26). Another instruction was to smear the hoof with bile, or a mixture of cow dung and charcoal (21).

Riding the horse on hard, slippery frost would provoke hyperaemia (i.e. activating the corium), constituting a rational basis for such treatment. Smearing the hoof with various ointments, leaf-lard, tallow or bile retains moisture in the hoof and prevents excess moisture from entering. With the same intention, various hoof ointments are still applied today. The use of cow dung and charcoal is another example of ‘dirty pharmacy’.

If the hoof of a horse became detached from the muscles, a plaster was applied. The plaster—prepared by placing a mixture of quicklime and crushed shells of two eggs onto hemp cloth—should remain on the hoof for three days (26).

This remedy has a rational basis and was probably effective.
In the case of a horse unable to gain weight, it was recommended to feed the animal beans (*Phaseolus vulgaris* L.) soaked in water (21).

It is highly unlikely that this practice would have led to significant weight gain.

If the horse was 'smashed' (severe bruising caused by a fall or similar accident), the recommendation was to rub the chest of the animal three or four times with a mixture of strong vinegar and crushed garlic. The horse should be ridden until it broke into a sweat, and then wrapped in a warm rug (21). Such injuries could also be treated by rubbing with a mixture of vinegar, soap, oil, mutton tallow, alum and egg-whites, or a mixture of vinegar, oil, wine, onion and eggs (26).

Wine vinegar (*Acetum vini*) was frequently mentioned in remedies for use in rubbing or in the preparation of plasters. In the treatment of internal and external injuries, onion and garlic are often used in folk medicine. However, the above instructions could not have been helpful in the treatment of internal injuries to horses, and riding – which would cause additional strain and sweating – would be positively harmful under such circumstances. In the case of severe bruising, active and passive massage can be considered effective only if commenced several days after the trauma.

Numerous instructions were provided for the treatment of nadanci (various skin disorders on the legs of horses, such as warts, atheroma, furuncles, acne, etc.). The most frequent remedy involved the application of the root of danewort (*Sambucus ebulus* L.), cooked in good wine under a crust of bread; the root was to be pressed to the affected area three times, for three days on each occasion (21).

Such disorders could also be treated with a mixture prepared by cooking hemp grains together with soap and strong vinegar. Another suggestion was to bake eggs in their shells, split the eggs into halves and press them onto the growths while still hot (26).

An insect called the 'Lord's lamb' (ladybird, Coccinellidae), softened in oil, could also be applied to *nadanci*. Alternatively, a plaster prepared from hemp grains cooked in vinegar could be applied (19).

Some instructions recommended the removal of the *nadanci* using a sharp knife; care was required to avoid damaging the ligaments, or these should only be 'cut open in the time of the full moon and left to dry up by themselves until the time of the new moon' (19).

Danewort was often used in Croatian folk medicine and was referred to by a total of thirty-six different names. The external application of the root and the leaves of danewort is still practised in folk medicine today, as a remedy for warts and various kinds of swellings. The use of hot eggs could have accelerated resorption or saturation. The cutting of *nadanci* at the time of the full moon is connected with the popular belief that verrucas appear and disappear in accordance with the lunar cycle.

In addition to the above procedures for the treatment of warts, numerous magical rituals were also practised.

For a horse which was unable to eat and was not known to be suffering from a particular sickness, it was recommended that powdered white wormwood (*Artemisia arborescens* L.) be cooked in strong vinegar; this mixture was to be filtered through a cloth and then smeared over the forehead of the animal, or even squirted into the nostrils (21).

Another instruction required that the horse be flogged several times with birch twigs (26).
The application of white wormwood was frequently recommended in traditional veterinary medicine and is still practised as a popular remedy nowadays. The practice of flogging was of a magical order, rather than a rational remedy.

In order to prevent a horse from drinking too much water in hot weather, it was recommended that common elder (*Sambucus nigra* L.) be tied between the ears, on the head or to the mane of the horse. There are also instructions to bleed a horse which has a tendency to drink excessively (21).

A completely different recommendation was to recite a prayer followed by a ritual during which the owner of the horse, before stepping into water, had to spit three times into the water, while all four legs of the horse were on dry ground (26).

In traditional veterinary medicine, excessive intake of water was considered to be an important cause of sickness.

Horses are highly sensitive to odours, and the intense smell of the flowers and leaves of the common elder was probably intended to discourage the animals from drinking too much water. Such instructions certainly caused no harm to the horse, while the blood-letting represented a real panacea at that time. The saying of prayers constituted a magical/religious ritual.

With a new-born foal, it was recommended that the 'spleen' situated under the tongue be removed before the foal began to suck (21).

'Spleen', here, refers to a kind of growth under or beside the tongue of the foal. This outgrowth in the mouth of foals is a remnant of the embryonic integument and is known as 'hippomanes'. Among the rural population in the past, a belief existed that a foal from which such an outgrowth was removed, immediately following birth, would later develop into an exceptionally fast horse. This is a typical example of superstition.

In order to castrate a foal, it was recommended that a loop of horse hair be tightened around the scrotum (21).

This method of castration is well known among the rural population.

If a horse had a 'soft back' (physical handicap of riding and draught horses), it was recommended that fresh water be poured over the animal after riding. One should then take quicklime, and a piece of wood which has been struck by lightning, and recite the 'Lord's Prayer' and 'Hail Mary in honour of Saint Francis' (26).

Pouring cold water over a horse can be considered a rational element of treatment, while the use of prayers and wood struck by lightning represents an expressly magical/religious ritual.

When a horse was exhausted (after hard work or over-riding) the instructions recommended rubbing warm leaf-lard from a black hog on the legs of the horse, against the direction of the hair, or walking the animal in a cool place so that the blood would not become heated too quickly. After a rest, the horse should be fed good oats and hay and be covered to keep warm (26).

Massage of an exhausted horse is a physiotherapeutic procedure, which is still applied successfully today, although other greasy ointments are now used for the massage instead of leaf-lard. It is always preferable to feed a horse after a good rest.

If a horse was suffering from keh (a collective name for the various diseases of the respiratory organs), it was recommended that pieces of wood from a sour cherry tree be
cooked together with flakes of soap, and that this be given to the horse to drink. An alternative treatment involved pounding together one litre of milk, half a litre of oil, a little rhubarb (*Rheum officinale*) and some soap. This should be placed in a new pot to boil, left to cool and fed to the horse when lukewarm (26).

The first of the above recipes could not have been helpful, while it is uncertain whether the decoction of milk, rhubarb and soap may have been useful.

If a horse began to cough badly, it was recommended that the animal be fed some bacon and grated ivory on bread (26).

In veterinary folk medicine, bacon has long been used as an expectorant. However, the addition of ivory powder (calcium carbonate and phosphate) served no useful purpose.

For a horse which was broken-winded (suffering from chronic pulmonary emphysema), it was recommended that pieces of belladonna root (*Atropa belladonna*) be placed in a pot with fairly hot water. The pot was to be placed at the bottom of a sack, while the open end of the sack was placed under the nose of the animal, which was thus forced to inhale the vapour. Another instruction was to add chopped leaves or roots of belladonna to the oats which were fed to the animal (31).

Another recommended treatment for this disease was to place jimsonweed (*Datura stramonium*) in the mouth of the horse, and then to muzzle the animal and force it to inhale air through the nostrils and hold its breath (31).

Inhalation of the warm vapours from belladonna root would certainly have had a positive effect. Jimsonweed contains alkaloids (hyosyamin, atropin and scopolamin) and is still used today in preparations serving as medicines against spasms, stiffening, rheumatism, asthma, coughing, inflammation of the eyes, neuralgia and renal colic (30).

Some of the *ljekarušas* contain instructions related to cases of poisoning (31). The roots of belladonna and jimsonweed are cooked in wine and this preparation is recommended for application as an antidote in various types of intoxication. The effect of belladonna as an antidote to opium poisoning is well known.

The use of black henbane (*Hyoscyamus niger* L.) is also mentioned. This plant contains the same alkaloids as belladonna, but in smaller quantities, and is therefore both less poisonous and less curative.

Instructions for the treatment of monthly ('moon') blindness in a horse recommended the use of belladonna, in view of the effect of this plant on dilatation of the pupil and the creation of a certain brightness in the eyes, thus masking the condition. Yellow mercurial ointment (traditionally called *prpečija* ointment) was also applied to the eyes to treat and to disguise monthly blindness in horses. Alternatively, powdered sugar was blown into the eyes of the horse.

In addition to the use of the medicinal herbs, vinegar was widely used in traditional veterinary practice in some regions.

One unknown author (13) recommended the application of vinegar in cases of inflammation, dislocation of joints and swelling of the lower leg, nose or neck, as well as to stem bleeding. Mixed with honey, vinegar was also applied for the treatment of various diseases located in the mouth, such as gingivitis or blisters on the tongue. Mixed with honey and a little salt, vinegar was used for rubbing into painful areas of the body.
A mixture of wine vinegar, pure wine, sulphuric acid and honey was used to prevent wounds from festering. The same mixture was also considered useful in treating blisters, inflammations and burns.

Among other remedies, great importance was attributed to brandy, which was mixed with wormwood and cumin for use in cases of intestinal disease and stomach bloat. Brandy also served to improve appetite.

An ointment prepared from honey, aniseed and sulphur was prescribed in cases of chronic cough and other pulmonary conditions.

In combating mange, the affected spots should be rinsed with buckwater and treated with lime water boiled together with crumbled sulphur.

**INSTRUCTIONS FOR THE TREATMENT OF CONTAGIOUS LIVESTOCK DISEASES**

While various injuries and organic diseases were treated by numerous – frequently even successful – procedures in the 19th century, little attention was paid to infectious diseases, and veterinary records of the time bear little mention of these diseases. It is difficult to determine whether this was due to complete ignorance or to a feeling of helplessness in the face of infectious diseases. However, it is known that foot and mouth disease, rinderpest, sheep pox, rabies, anthrax and glanders were recognised at that time.

Until the middle of the 19th century, medicines for treating various diseases were principally recorded in manuscripts. Subsequently, daily newspapers began to report such medicaments: some reports came from farmers in Croatia, or newspapers would simply summarise accounts from the foreign press or professional publications. However, these healing treatments were useless, as they were not based on knowledge regarding the agent of disease or the real potential for prevention and treatment.

**Rabies**

Rabies was the best known and most dangerous infectious disease prevalent at the time. Present in the region for more than three thousand years, rabies was the subject of the largest number of manuscripts. Thus, the inclination of dogs towards rabies is mentioned in a booklet published as early as 1837 (1). Another brochure, published sixteen years later (2), mentions the following possible causes of rabies: excessive heat or extreme cold; preventing dogs from mating during the rutting period; the feeding of foul-smelling meat; irritating the animals or allowing them to drink dirty water too quickly.

In order to prevent the spread of rabies, many different recommendations and orders were proposed in the 19th century. While some of the recommendations contained in the 1837 booklet (1) can still be considered valid today (e.g. preventing healthy and rabid dogs from meeting; preventing dogs from straying), others are completely incomprehensible now (e.g. a bitten dog should be washed all over or should be made to run through water; bite marks should be rinsed with buckwater, salty water or vinegar and then dusted with ashes obtained from tobacco or wood). Fourteen years later, the Mayor of Zagreb (29) ordered that dogs should be muzzled when on the street, and that any dog found without a muzzle would be caught and killed. Although the muzzling of dogs was ordered relatively early, registration of dogs and the wearing of dog tags
became obligatory in 1869 (9), thus showing a high level of understanding of the essence of rabies. Nevertheless, daily newspapers continued to contain instructions which appear foundless today. For example, as late as 1897 (18), the citizens of Zagreb were advised to leave bowls of cold water in front of hostleries, inns, ale houses and coffee houses, which should be changed several times a day, so that stray dogs would always have cool, fresh water at their disposal. It was thought that dogs deprived of drinking water could go mad.

Other, equally unfounded attempts were made to deal with rabies. Thus, a rural teacher named Lalić attempted to heal rabies in animals and humans by cutting the blood vessels under the tongue and orally administering the juice of the *Gentiana cruciata* plant. General opinion was that these attempts were successful, and Lalić even wrote a book on this subject (20, 22). Due to the great interest in such treatments for rabies, the book was translated into German (20, 23) and into Italian (20, 24) in the same year as the original publication.

Several years later, in the village of Vugrovo, a farmer named Nijemčić (27) began treating rabies by administering a powder consisting of pieces of the insect *Lyssa vesicatoris* killed in vinegar, then dried and mixed with some flour. This mixture was to be dissolved in drinking water and administered for five days. On the fifth day of treatment, in a procedure similar to the treatment recommended by Lalić, Nijemčić cut the blood vessels under the tongue of the patient. Subsequently, several generations of the Nijemčić family treated rabies in animals and humans in this manner.

In the second half of the 19th century, daily newspapers in Croatia published, with increasing frequency, articles from Austrian, German, Hungarian and Russian periodicals on the various methods of combating rabies. Most prominent among these articles were the following:

- the steam-bath treatment (developed by Cuisson) with water temperatures above 50°C (10)
- the application (by Offenberg) of curare poison (11)
- the rinsing of the bite (proposed by Geistel) with a mixture of wine vinegar and tepid water and, after drying the wound, the instillation of a few drops of chloric acid (12)
- the application of five drops of Indian hemp oil (proposed by Ruxton) (14)
- smearing the bite with crushed garlic and drinking a decoction of garlic for nine days (proposed by Bouley) (15).

The use of such methods continued until the discovery of a vaccine by Pasteur and, unfortunately, persisted even longer in some regions.

**Rinderpest**

Problems arising in connection with other infectious diseases were solved in a similar manner. For a long time, rinderpest was the only recognised infectious disease - with the exception of rabies - which can still be recognised today. As with rabies, all manner of 'remedies' were used for rinderpest. Schmidt (28) recommended sprinkling the entire bodies of sick cattle (except the eyes, nostrils, mouth, anus, udders and genitals) with oil of turpentine. While sprinkling, it was necessary to rub the body vigorously with straw and then to cover the animal to keep it warm. Two hours later, the abdominal sides of the affected cattle were to be smeared with an ointment consisting of oil of turpentine mixed with a powder made from crushed insects of the species *Cantharides* and *Tartarus*
emeticus. This ointment was to be applied every six hours. If the skin around the mouth became dry, blood should be drawn. If an adult animal became sick, the following recipe should be followed: boil the roots of Symphytum officinale and willow bark in water for half an hour; after boiling, add sal ammoniac (ammonium chloride) to the mixture, and pour this over the entire body of the animal.

Several years later, in the Economic Gazette (6), application of arsenic was recommended in combating rinderpest.

**Anthrax**

In the second half of the 19th century, anthrax occurred frequently in a large number of domestic animals and, not surprisingly, many methods of treatment were suggested, including the feeding of raw potato (7).

According to reports received from Russia (4), the best way to combat anthrax in sheep was to deny water to the sick animals. Another instruction from Russia and Moravia (5) required piercing the spleen of the sick animal between the second and the third ribs. For a long time, it was also believed that eggs blessed at Easter were helpful in the prevention of anthrax (M. Kadić, unpublished findings, 1965).

**Foot and mouth disease**

In 1844, keeping animals in a plum orchard was recommended for preventing the spread of foot and mouth disease. Another suggestion was to feed ruminants with hay, and swine with slops containing maize meal, grass and salt. The water given to the animals was to be well boiled. In addition, each Sunday, swine should be given water mixed with saltpetre to drink. Blisters on the hoofs were opened and rinsed with salty water, and festering wounds were cut with a knife and dusted three times daily with a mixture of turpentine and camphor. The wall of the mouth was smeared with a mixture of muriatic acid, honey, flour and a little water (M. Kadić, unpublished findings, 1965).

**Mange**

‘Safe’ medicines also existed for mange in sheep, which was frequent and widespread in the region. Sick animals were smeared with water in which tobacco had been boiled, and were then dusted with blue vitriol powder (M. Kadić, unpublished findings, 1965). Some other farmers treated animals with chlorinated lime dissolved in water (3).

**Swine erysipelas**

Swine suffering from erysipelas were treated by pouring cold water over the animals (8).

**Classical swine fever (hog cholera)**

In 1895, classical swine fever occurred in Croatia for the first time. As little as two years after the first occurrence, a remedy for the sick animals was circulating among the farmers, which involved bringing horse dung into the pig sty (16). Almost at the same time, one breeder (17) was boasting that he had cured his swine by feeding them pieces of the hearts of animals which had perished as a consequence of the swine fever; the meat had been dried and mixed with barley. Another breeder claimed to have cured swine by adding human urine to the slops (17).

**Infestations of worms and lice**

In a collection of prescriptions from the middle of the 18th century, Krčelić (21) recommended feeding sick hens in the morning and evening with a mixture of dried oats...
and the plant *Antirrhinum olent* crushed into small pieces. Krčelić also recommended the use of *Artemisis abrotanum* in ridding a horse of worms (21). According to Kadić (21; M. Kadić, unpublished findings, 1965), a belief survived among the inhabitants of Slavonian Posavina (the Sava River basin) that intestinal worms in hens could be eradicated by feeding the birds ground pumpkin seeds or pumpkin oil.

Glanders

In the second half of the 17th century, glanders was treated using soap and tickbean (*Vicia faba*) soup, according to the ancient healing instructions collected by Šćrbačić (26).

CONCLUSION

Some of the ‘remedies’ used in the past to treat organic diseases, bone fractures and inflammations remain in use today.

However, all of the so-called ‘cures’ for infectious diseases have long fallen into disuse, as they proved unsuccessful. Such methods could not have been beneficial for sick animals as, at the time, there was no knowledge of the agents and sources of infection, nor of the means of transmission, nor the means by which the agent entered the organism. Consequently, prevention and successful treatment of the infection were impossible.

Even when research led to discovery of the essence of these infections, this achievement was not understood by animal breeders for a long time, and the use of traditional methods of treatment continued. However, the micro-organisms which were the agents of infectious diseases did not respond at all to the power of such remedies. To deal adequately with these infectious disease problems required the advent of a new age, bringing with it the microscope, bacteriological media and vaccines.

* MÉTHODES TRADITIONNELLES DE TRAITEMENT DES MALADIES ANIMALES EN CROATIE. - V. Vučevac-Bajt et M. Karlović.

Résumé : Les méthodes traditionnelles de traitement des maladies animales, notamment les maladies non infectieuses, occupent une place particulière dans l'histoire vétérinaire de la Croatie. L'application de la phytothérapie à différents types d'affections a été décrite dans de nombreuses publications. La médecine populaire faisait aussi appel, dans bien des cas, à des pratiques occultes ainsi qu'à des préparations comprenant des ingrédients d'origine animale, végétale ou minérale. Les Dreckapotecke (ou médications et remèdes dits « sales ») faisaient également partie de la médecine empirique en usage aux XVIIe et XVIIIe siècles.

Dans les ljekarušas vétérinaires (recueils d'anciennes prescriptions médicales), les principales recommandations ont trait à des interventions chirurgicales ; on y trouve peu d'instructions concernant le traitement des affections parasitaires et systémiques, et encore moins concernant l'obstétrique et les maladies infectieuses. Si certaines médications n'avaient aucun effet, d'autres méthodes, utilisées dans la médecine populaire, pouvaient parfois
s'avérer nocives. Dans la plupart des cas, le traitement utilisé était d'une efficacité douteuse. Cependant, dès les débuts de la phase « expérimentale » de lutte contre les maladies, un certain nombre de pratiques relativement valables et empruntées à la médecine traditionnelle ont été adaptées et intégrées à la thérapeutique scientifique.


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MÉTODOS TRADICIONALES DE TRATAMIENTO DE LAS ENFERMEDADES ANIMALES EN CROACIA. – V. Vučevac-Bajt et M. Karlović.

Resumen: Los métodos tradicionales de tratamiento de las enfermedades animales, y en particular de las enfermedades no infecciosas, ocupan un lugar de importancia en la historia veterinaria de Croacia. La aplicación de la fitoterapia a diferentes tipos de afecciones ha sido descrita en varias publicaciones. En muchos casos, la medicina popular ha recurrido también a prácticas mágicas así como también al uso de ingredientes de origen animal, vegetal o mineral. Los Drekapotecke (medicaciones o fármacos llamados «sucios») también formaban parte de la medicina empírica practicada en el país en los siglos XVII y XVIII.

En los ljekarušas de veterinaria (colecciones de antiguos textos médicos), las mejores recomendaciones se refieren a intervenciones quirúrgicas; se encuentran pocas instrucciones sobre el tratamiento de afecciones parasitarias y sistémicas, y menos aún sobre obstetricia y enfermedades infecciosas. Algunas medicaciones de la medicina tradicional no producían efecto, y algunos tratamientos podían llegar a ser nocivos. En la mayoría de los casos, la eficacia de los tratamientos era dudosa. Sin embargo, desde los comienzos de la fase «experimental» de lucha contra las enfermedades animales, algunas prácticas relativamente eficaces tomadas de la medicina tradicional fueron adaptadas e integradas a la terapéutica científica.

PALABRAS CLAVE: Croacia – Fitoterapia – Historia – Medicina tradicional – Medicina veterinaria.

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REFERENCES


2. ANON. (1853). – Instruction on necessary measures and means for prevention of rabies in animals and men [Nauk o potrebitih oprežih i sredstvih, kojimi se preprečuje kod živine i kod ljudih, da se biesnoča (bies, steklina) nepojavl]. Berzotiskom Dra Ljudevita Gaja, Zagreb, 8 pp.


6. ANON. (1868). – Cattle plague [Marvinska kuga homeopatički ličena]. Gospodarski list, 16 (37), 164-165.

7. ANON. (1868). – Against anthrax in pigs [Proti bedrenici svinjah]. Gospodarski list, 16 (41), 190.


11. ANON. (1878). – A rabid man was cured [Biesan čovjek izliecio se]. Liječnički vjestnik, 2 (5), 82-84.


17. BROZOVIC L. (1956). – Bedekovic’s ‘ljekarusa’ (collection of old veterinary recipes) [Bedekovićeva ljekaruša]. Vet. glasnik, 10 (8), 618-628 & 10 (9), 705-713.


