

Chapter 34

Role of Homeopathic Medicines for Gastrointestinal Nematode Control in Animals

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ABSTRACT

Gastrointestinal nematodes pose great threats to animal health and productivity worldwide, affecting small ruminants and large animals. Control monitoring primarily relies on anthelmintic drugs, grazing management, and integrated parasite management strategies. Homeopathic remedies have appeared as an alternative approach, offering safe, nontoxic solutions with minimal adverse effects. Homeopathic remedy which originates from natural sources, treat parasite infections while also improving overall animal health. Such medicine may also enhance immunity, restore equilibrium, and mitigate symptoms caused by gastrointestinal nematode infestations. When considered with conventional medications, homeopathic therapies are very much less expensive, safer, and less likely to contribute to parasite resistance. The homeopathic comprehensive approach targets main disease problems while also enhancing host immunity. Homeopathic remedy offers a promising address to treating gastrointestinal nematodes in animals, with faster recovery and better health results.

KEYWORDS

Homeopathic remedies, Parasite infections, Cost-effective, Gastrointestinal nematodes, Host immunity

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INTRODUCTION

Gastrointestinal nematodes are a varied group of infections that infect one-half of the population on the entire globe and almost all feeding cattle. Throughout their life cycles, these macroparasites develop and travel throughout the gastrointestinal regions of hosts, releasing chemicals that modify the host mucosa, allowing for chronic infections. For the wellbeing of animal welfare and health while increasing livestock output from finite natural resources, gastrointestinal nematode control is essential. Small animals like sheep and goats are most infected by various gastrointestinal nematodes. The host-parasite relationship and the dominant agroclimatic conditions have an impact on the parasites' epidemiology. Sheep and goats acquire infection in warmer climates are more likely to have *Haemonchus*, *Trichostrongylus*, and *Bunostomum*, while those in temperate temperatures are more likely to have *Teladorsagia (Ostertagia)*, Nematodes, and *Cooperia*, which can cause serious illnesses. Parasite infection with gastrointestinal nematode worms is a leading cause of reduced sheep productive capacity and livestock mortality (Alvi et al., 2020; Alvi et al., 2021; Alvi et al., 2022; Alvi et al., 2023). Small ruminants are sensitive to the diseases *Haemonchus contortus* and *Trichostrongylus*, *Oesophagostomum sp*, *Cooperia sp*, *Trichuris sp.*, and *Bunostomum sp*, have been linked to large financial harm for ruminants. *Haemonchus contortus* worm, a blood-sucking roundworm found in the abomasum, is the leading reason for parasitic infection in small ruminants in Indonesia (Sawitri et al., 2023). These nematodes can cause various health issues in infected animals, also leading to economic losses and welfare concerns (White et al., 2022). Gastrointestinal nematodes are now a major concern in small and large animals, particularly sheep, cattle, and goats. These parasites can cause huge harm to the host's gastrointestinal tract, causing

reduced feed intake, weight loss, and even death in severe cases. Nematodes also cause infection in small animals too, parasites live in the small intestine and can result in mucoid diarrhea and/or loss of condition. Parasite infections cause nonspecific symptoms such as a poor haircoat, coughing, vomiting, diarrhea, mucoid or bloody stools, loss of appetite, pale mucous membranes, or a potbellied appearance (Roeber et al., 2013). The current method to control nematodes by giving anthelmintic drugs, homeopathic therapy, Grazing management, genetic selection, and integrated parasite management. The broad-spectrum medications (anthelmintics) used to control nematode parasites are shown in (table 1) that are divide into three classes: benzimidazoles, imidothiazoles, and macrocyclic lactones.

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Table 1: Classification of Anthelmintics:

Broad spectrum drugs	Narrow spectrum drugs
Benzimidazoles e.g • Albendazole • Mebendazole	Organophosphates e.g • Dichlorvos • Trichlorfon
Imidazothiazoles e.g • Levamisole	Piperazines e.g • Piperazine citrate • Piperazine adipate
Tetrahydropyrimidines e.g • Pyrantel	Arsenicals e.g • Melarsomine • Arsphenamine
Avermectin e.g • Ivermectin • Abamectin	Salicylanilides e.g • Niclosamide • Oxyclozanide

Parasite Integral Control (PIC) refers to the application of several control systems. Most studies have center of attention on the control of highly harmful nematodes, such as *Haemonchus contortus* and *Teladorsagia*, in small ruminants due to their blood-feeding behavior (Kenyon et al., 2009). The PIC took into consideration of rotation of meadow, choice of tolerant breeds, biological management (i.e., nematophagous fungus and rapacious nematodes), particular deworming, vaccinations, and variations with conventional herbal medicine (Aleixo et al., 2014). Homeopathic therapy are also play are big role in controlling gastrointestinal nematodes in animals (Tariq et al., 2015). Homeopathic remedies are derived from minerals (like white arsenic), plants (like stinging nettle, red onion, belladonna, arnica, a mountain herb), or animals (such crushed whole bees). Homeopathic medications are now frequently prepared, they can be made into sugar pellets to be applied under the tongue, but they can also be used as pills, ointments, gels, drops, and lotions.

History and Principles of Homeopathy

Homeopathy, derived from the Greek words "homoios" (same) or "pathos" (suffering), is a medical practice founded on the principle of "similia similibus curentur." German physician Samuel Christian Friedrich Hahnemann (1755-1843) founded it in 1796 with his "Essay on a New Curative Principle for Ascertaining the Curative Power of Drugs with a Few Glances at Those Hitherto Used" (Madrewar et al., 2003). Homeopathy gained popularity in the 19th century because of its success in epidemics but fell throughout the 20th century. Its popularity rose during the late twenty and early twenty-first centuries, this occurred globally. Homeopathic remedies are ultra-diluted or ultra-molecular compounds, and "dynamized" systems are terms used to describe preparations that follow homeopathic pharmacopeia (Wynn et al., 1998). The hindmost defines homeopathic medicine as "any type of pharmacological dispensation provided, by the principle of resemblance and/or identity, for therapeutic and/or preventive purposes. Homeopathic remedies are created using the dynamization technique and can be used internally or externally. Homeopathy is contentious due to the use of severely diluted medications. Many clinical studies including meta-analyses, show that homeopathy has non-pharmacological effects. Cohort, observational, and economic studies have demonstrated positive results (Fisher et al., 2012). Homeopathic dilution is a technique in which a chemical is diluted with alcohol or distilled water and then vigorously shaken in a process known as "succussion" at each dilution stage, homeopathic treatments are subjected to succussion or forceful shaking in addition to dilution. Advocates assert that succussion amplifies the remedy's energetic qualities, increasing its potency even at very low dilutions. Homeopathy also highlights the importance of individualization in treatment. Homeopathic remedies are chosen after a whole evaluation of the animals' physical, emotional, and mental symptoms. The main objective is to find the treatment that best addresses the patient's symptoms in their entirety, including modalities (factors that alleviate symptoms) and concomitants (Rudneva et al., 2016).

Properties of Homeopathic Therapy

Homeopathic medicines are nontoxic and easily available in underdeveloped countries too. Homeopathic medicine plays a great role against gastrointestinal nematodes in small ruminants and companion animal. Medicine has no adverse effects and is easy to administer, so easy that in various cases, the owner of domestic animals themselves can administer the drug despite having to wait for a veterinary surgeon. Bloodletting, burning, purging, and other unpleasant and debilitating procedures that may lower the value of the animal after recovery are not used in the homeopathic system of treatment (Aleixo et al., 2014). On the other hand, it shortens the recovery period, allowing patients to regain strength faster. Homeopathic medicine never interferes with analgesics, vitamins, or physical therapy. Antibiotics and tranquilizers can be used alongside homeopathic medications. Homeopathic medication can also treat side effects from allopathic treatment, vaccines, and radiopathy, Thuja or noscodes can treat the side effects of a vaccine made from pathogenic germs responsibly. Antibiotic, hormonal, and corticosteroid side effects can be treated with a potentized variant of the same treatment, such as nux vomica. In the case of gastrointestinal nematodes, a balanced diet and proper care, in addition to homeopathic therapy, are necessary, and no drug can possibly replace these requirements (Madrewar et al., 2003).

Mechanism of Action against Gastrointestinal Nematodes Immunity Regulatory Response

Homeopathic treatment is involved in regulating the animal's immunological response by enhancing its ability to resist parasitic infections. Homeopathy may assist animals deal with gastrointestinal nematode infestations by activating the body's natural defense mechanisms (Severino et al., 2012).

Revival of Balance

Homeopathic therapies aim to achieve harmony and balance in the animal's body by addressing underlying abnormalities that may predispose them to parasite diseases. The comprehensive approach is to target the underlying causes of illness.

Palliative Therapy

Homeopathic therapy is mostly used as a complement to traditional treatments for gastrointestinal nematode infestation in cats and dogs. Therapies can help relieve pain, reduce inflammation, and improve overall gut health during and after anthelmintic therapy (Madrewar et al., 2003).

Safe and Non-Toxic Effect

Homeopathic remedies are mostly considered safe for use in companion animals with little risk of side effects or drug interactions. Mostly provides a healthy and non-toxic solution to conventional anthelmintic drugs, especially for animals with sensitive gastrointestinal systems or compromised health (Aleixo et al., 2014).

Administration of Homeopathic Medicine to Animals

Homeopathic medicine is mostly used internally and externally in animals. For good results, this medicine should be administered internally, preferably 15 to 30 minutes before or after the feeding schedule. For internal use, homeopathic medicine is available in different forms.

Mother Tinctures

It has the lowest potency of any given homeopathic medicine. A botanical extract can be quite beneficial in the cure of various health issues, from moderate to severe; nevertheless, it should not be administered without the advice of a homeopathic medical practitioner. For large animals such as cattle and horses, 10 drops of tincture should be combined with clean, cold water and dipped in a bottle. Five drops are also used for small animals too.

Powder and Pills

Pellets can be placed on animals' dry tongues or blended with feed. The powder is administered at a dosage of two grains to large animals and one grain to small animals as shown in (Fig. 2).

Potentiated Dilution

Homeopathic dilution is a technique in which a chemical is attenuated with alcohol or distilled water and then rapidly shaken in a process known as "succussion". Potentiated dilution is typically delivered via a vehicle such as globules, pellets, or disks, which can be soaked in the dilution and stored in a labeled bottle. The globule usually provides sick animals with food. Keep away this type of medicine from light and heat, so the potencies can be retained. Homeopathic medicine has an advantage over allopathic medication, they are absorbed through the tongue and palate too (Babli et al., 2022).

External use

Very few drugs are administered in the form of lotions and ointments as shown in (figure 4). The lotion is made by combining one tablespoon of the mother tincture and half a pint of purified water for external application.

Arnica Montana

Homeopathic practitioners recommend the alpine plant *Arnica Montana* for treating injuries because it relieves stiffness, and discomfort, and promotes wound healing.

Calendula officinalis

Calendula officinalis sometimes called pot marigold, medicinal herb mostly used in pain such as abdominal pain and cramps mostly caused by nematodes in animals' also acts as anti-inflammatory properties (Narang & Anjula, 2020).

Rhus Toxicodendron

It has a high value in sprain, and injury to ligaments, tendons, and joints.

Homeopathic Remedy for Gastrointestinal Nematode Control CINA

Obtained from the plant *Artemisia Cina*, *A. cina* is an Asteraceae-family plant whose active metabolite is artemisinin. This herb possesses antihelmintic and antimalarial properties (Rudneva et al., 2016). *Artemisia cina* shows great therapeutic impact against parasites. *Artemisia cina* is used as a homeopathic medicine and used against gastrointestinal nematodes in animals. Intestinal nematodes including *Haemonchus contortus*, the most frequent worm present in tropical climates, are among the main infections that limit animal productivity. *Artemisia cina* shows great efficacy against the *Haemonchus contortus* in small ruminants as shown in (table 2). *A. china* is one of the best homeopathic remedies against the gastrointestinal nematode in animals (Higuera-Piedrahita et al., 2020).

Ferrum Phosphoricum

Ferrum Phosphoricum acts as a homeopathic medicine that improves iron absorption by increasing hemoglobin levels and reducing serum ferritin levels in the blood. It attracts oxygen, causing circular fibers of vessels to contract and equalize circulation. It also acts on intestinal villi to absorb nutrients and micronutrients, reducing iron intolerance. Chemically, it is made by combining sodium phosphate with iron sulfate in a specific proportion. The precipitate is then filtered, dried, and rubbed into a bluish-grey powder that has no odor or flavor. Aside from several other health issues, it is a leading medicine for managing anemia, which occurs during the gastrointestinal nematodes. Also used in the first stage of inflammatory conditions such as sore throat, tonsillitis, otitis media, and conjunctivitis; controlling bleeding from various body parts such as the nose, lungs, uterus, and rectum, and managing weakness after blood loss. *Ferrum Phosphoricum* mostly used in *Haemonchus contortus* infestation as shown in (table 2) (Motiwala et al., 2022).

Nux vomica

Nux vomica is an extract of the seeds of the *Strychnos nux-vomica*, or strychnine tree, used in traditional and homeopathic medicine with alleged advantages for a variety of illnesses as shown in (figure 1). *Nux vomica* is used in digestive tract disturbance, including vomiting, diarrhea and abdominal pain mostly caused by nematode infestation (Goel et al., 2018). As we compared with conventional allopathic medicines, *nux vomica* is a more easily affordable and easily accessible homeopathic. Homeopathic remedy that can treat both acute and chronic conditions with fewer side effects (Rehman&Tayyeba, 2021).

Sulphur

Sulphur comes from mostly brimstone. *Sulfur* is mostly used as a homeopathic medicine. It is used to treat a variety of ailments, including skin issues, hot flushes, and digestive problems that may be accompanied by gastrointestinal nematodes. It is a deep-acting drug that has a noticeable effect on practically all the body's organs, with the skin remaining particularly evident (de Barros et al., 2023).

Teucrium Marum Verum

Teucrium is obtained from the *Teucrium Marum Verum* plant, also known as cat-thyme, which belongs to the Labiatae family. This completely fresh plant is potentized (a procedure used to make homeopathic medicines in which the medicinal properties of a crude substance are activated), and it is transformed into the extremely useful homeopathic drug *Teucrium*. Commonly used in the treatment of intestinal worms in cats, it may also help to alleviate abdominal symptoms too (Maher&Patricia, 2017).

Podophyllum Peltatum

Podophyllum Peltatum (also called Mayapple) is useful in the remedies of regional enteritis disease because it may act on the small intestine and rectum. Its specialization is the cessation of extreme diarrhea, and watery diarrhea, and can help stop vomiting and in excessive pain mostly caused by gastrointestinal nematodes (Kalam et al., 2021). *Mercurius solubilis* is a homeopathic medication used to treat a variety of conditions, including right earache with foul discharge, recurrent sinusitis

with an objectionable odor, sore throat with increased saliva, and metallic taste. It is also known as Merc Sol and is generated from the chemical mercury nitrate ($\text{Hg}(\text{NO}_3)_2$) (Garcia-Bustos et al., 2019).

Mercurius solubilis

Mercurius Solubilis (Merc.) is derived from highly hazardous mercury but is safe to use when made in homeopathic potencies (Vangoori et al., 2013). *Mercurius solubilis* is a homeopathic medication used to cure a variety of conditions, mostly caused by gastrointestinal nematodes (Narang & Anjula, 2020).

Calcarea carbonica

Calcarea Carbonica is a homeopathic therapy made from calcium carbonate found in oyster shells that is effective for gastroenteritis and digestive disorders, meteorism, acid reflux, vomiting, diarrhea, that may be accompanied by gastroenteritis nematode in animals. It is especially effective in cases of delayed digestion, sour belching, and aversion to cold (Nosal et al., 2016).



Fig. 1: Homeopathic herbs in mortar



Fig. 2: Homeopathy drugs

Santonin

The active ingredient of *Santonica* refers to the unexpanded heads of flowers of *Artemisia maritima-Cina*. *Santoninis* mostly used as antihelmintic medicine. Mostly used against *Trichinella spiralis* nematodes as shown in (table 2). *Santonin* also cripples parasitic worms, allowing them to be expelled from the body (Sukul et al., 2005).

Allium sativum

Allium sativum, also known as common garlic. *Allium sativum* is mostly used as a homeopathic remedy against gastrointestinal nematodes in ruminant animals. Mostly used against *giardia muris* nematodes. *Allium sativum* is also used to decrease the number of parasite infestations in small animals (Masamha et al., 2010).

Azadirachta Indica

Azadirachta Indica is one of the most potent homeopathic treatments that helps cure numerous sorts of skin problems and fevers. The use of plant extracts commonly known as *neem* (*Azadirachta indica*) with insecticidal action may become a viable alternative in the fight against gastrointestinal nematodes. Mostly used against gastrointestinal nematode infestation in sheep and goats (Fonseca et al., 2020).

Aloe socotrina (Socotrina Aloes)

Aloe socotrina is an effective homeopathic treatment used as a purgative. It is a vegetable kingdom cure from the Liliaceae family, sometimes known as '*Socotrina Aloes*'. Mostly used in case of intestinal irritation and inflammation (Singh et al., 2020).

Colocynthis

Citrullus colocynthis, also known as Abu Jahl's melon in Turkey, *colocynth*, bitter apple, bitter cucumber, egusi, vine of Sodom, or wild gourd, is a desert viny plant native to the Mediterranean Basin and Asia, mostly in the Region of Palestine, Turkey, and Nubia. It resembles a standard watermelon vine and produces small, Firm fruits with unpleasant flesh (Madrewar et al.,2003). It was originally given the scientific name *Colocynthis Citrullus*. mostly used in the treatment of stomach cramps caused by gastrointestinal nematode. A very effective drug for abdominal pain. The medicine is especially beneficial in bowel distention when percussion of the abdominal region generates discomfort and tenesmus. Give one dosage every third hour as shown in (Figure 2) (Fetene et al., 2019).

Comparison between Allopathic and Homeopathic Drugs

The allopathic drug sometimes is the most costly in underdeveloped countries like African countries, the drug is mostly given based on animal weight, so the quantity of medicine and its cost would proportionally be very high compared to Homeopathic drugs. In the case of homeopathic drugs are easily available and not very much more costly than conventional drugs. The conventional anthelmintic drug has more efficacy, in the case of homeopathic drugs they give also good positive results in the case of nematodes.(Andrade et al.,2011). Homeopathic drugs are the safest and are non-toxic while in the case of allopathic drugs, they may carry some adverse effects such as gastrointestinal upset, neurotoxicity, and allergic reactions. By giving more conventional drugs sometimes more resistance develops among gastrointestinal nematodes in animals. Parasite community can build resistance to specific anthelmintic over time, reducing the effectiveness of treatment options. In homeopathic remedy resistance development by drug is very low, Practitioners suggest that homeopathy's holistic strategy may lessen the chance of resistance development by resolving underlying abnormalities and enhancing the host's natural defenses (Bell et al., 2015). Homeopathic medicine will not produce the disease in system of the body e.g. in brain disease, intestine portion, whereas allopathic drug also has some adverse effects on the body organs. Both drugs contribute to the reduction of parasite burden and accompanying clinical signs; some have a long-lasting effect as shown in (Figure 3) and extended resistance ability, but evidence supporting the long-term impact of treatment on animal health and productivity is lacking (Cavalcanti et al., 2007).

Table 2: Usage of homeopathic medication in nematodes:

Parasite of animals	Homeopathic medicine	Treatment procedure	Consequences of drug
<i>Trichinella spiralis</i>	<i>Santonin</i> and <i>Artemisia Cina</i> (30 CH)	50mg/kg from the seventh day of infection for 120 days.	Decrease the number of larvae
<i>Haemonchus contortus</i>	<ul style="list-style-type: none"> • <i>Ferrum Phosphoricum</i> of larvae • <i>Calcarea carbonica</i> <i>Teucrium Marum Verum</i> Decrease the number of	Give medicine only for 10 days, • response	Decrease number in immune • eggs in feces
<i>Oesophagostomum species</i>	Phosphorous used as homeopathic medicine	Mix with mineral salt for 10 days in animal	Decrease the number of parasites
<i>Cooperia</i>	<i>Teucrium Marum Verum</i> <i>Mercurius solubilis</i>	Mix with mineral salt, give 6g/per kg, spontaneously	Decrease the number of parasites, also decrease intestinal symptoms
<i>Trichostrongylus Species</i>	<i>Teucrium Marum Verum</i> <i>Complex Sulphur</i>	Mix in water, give only 10 drops daily till infection feces	Decrease the number of eggs in feces



Fig. 3: Herbal drugs



Fig. 4: Homeopathic Ointment

Benefits of using Homeopathic Medicine on Animals

Animals, like people, respond very well to the healing powers of homeopathic treatments. The only dependence is on symptom observation rather than diagnosis, which not only makes it possible to treat animals without a diagnosable illness but also to treat newly discovered diseases for which there is currently no established class of drugs or a recommended course of treatment (Chagas et al., 2008). Homeopathy is an incredibly natural, compassionate, and successful kind of treatment because it uses the body's inherent defenses against illness to produce healing. Animals given homeopathic treatment frequently recover far faster than those given standard medical care (Burke et al., 2009). When it comes to homeopathy, animal trials are not required to prove medications, since the treatments have been demonstrated on humans, it is known what conditions they can treat. Homeopathic medicine also plays a great role against the gastrointestinal nematode in animals (Fomum et al., 2018).

Conclusion

In the end, proper handling of gastrointestinal nematodes in animals, particularly small ruminants, is critical for their health and production. While conventional anthelmintic medications have been widely utilized, concerns about susceptibility and side effects have led to the investigation of alternative remedies like homeopathy. Homeopathic remedies provide a safe, holistic method to stimulate intrinsic healing mechanisms and regulate immunological responses. They are readily available and inexpensive, making them viable solutions even in areas with limited resources. Integrating homeopathy into parasite management supplements traditional methods by addressing underlying causes of sickness and strengthening natural defenses. With the need for more studies, homeopathic therapy has promised long-term nematode control in animals. Communication among veterinarians, researchers, and practitioners is critical for understanding the efficacy and appropriate use of homeopathic treatments in nematode control program. This comprehensive strategy has the potential to improve animal welfare and overall livestock health.

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