

Chapter 06

Homeopathic Medicine for Treating Various Diseases of Poultry

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ABSTRACT

Homeopathy word is derived from two Greek words “homoios” and “pathos” which means similar and suffering, respectively. It was created in 1796 by Samuel Hahnemann. This practice is based on 3 basic principles including similarity, individualization of cases and infinitesimal. It is equally effective in veterinary field as in humans. One of the basic principles which is ‘similia similibus curantur’ means let like to be treated by like. It is used in poultry to treat various bacterial, viral, parasitic diseases, nutritional deficiencies, stress and to enhance their production and growth. Homeopathic medicines have many advantages like they cannot cause disease, have no major side effects, small doses are sufficient, easy to be administered and are cheaper than others. They can be used along with the allopathic drugs or vaccines to eliminate their adverse effects or to enhance recovery. The routes of administration are internal or externally, optimum results are by internal administration. Commonly used homeopathic medicines in poultry are Mercuris solubilis, Nux vomica, Sulphur, Carbo vegetabilis, Veratrum Album, Belladonna, Kali, Kali sulphuricum, Thuja, Pulsatilla, Natrum sulphuricum, Natrum muriaticum, Ferrum phosphoricum, Calcarea phosphoricum, Bryonia, Sabadilla, Kali bichromicum, Allium cepa, Alfalfa, Santonin, Glonoine, Arnica montana, Aconite napellus, Antimonium tart, Cicuta, Echinacea, Hypericum, Vaccinium and Variolinum.

KEYWORDS

Homeopathic medicine, Herbal treatment, Poultry diseases, Natural remedy

Received: 08-Jul-2024

Revised: 19-Jul-2024

Accepted: 11-Aug-2024



A Publication of
Unique Scientific
Publishers

Cite this Article as: Samad MA, Husnain M, Sarfraz MS, Qureshi MA, Ali H, Rehman HU, Ijaz U, Khan M and Tariq A, 2024. Homeopathic medicine for treating various diseases of poultry. In: Abbas RZ, Khan AMA, Qamar W, Arshad J and Mehnaz S (eds), *Complementary and Alternative Medicine: Botanicals/Homeopathy/Herbal Medicine*. Unique Scientific Publishers, Faisalabad, Pakistan, pp: 49-56. <https://doi.org/10.47278/book.CAM/2024.035>

INTRODUCTION

The world's population is expanding at a greater rate and similar is the scenario with the demand for food to fulfill global nutritional needs (Tian et al., 2021). The food security principles are highly centered on the motive to provide safe, hygienic, and quality food to every human being on the globe at an affordable price. The poultry industry has shown a significant potential to meet the growing demands of the population while fulfilling the food security parameters (Kleyn and Ciacciariello, 2021). Although the poultry industry provides a promising future yet, modern poultry production practices must face a lot of issues due to the adoption of control shed systems as it makes the whole flock prone to a particular disease due to closed premises. There are a lot of bacterial, protozoal, and viral infections that poultry birds must come across during their lifespan (Wickramasuriya et al., 2022). The most prevalent conditions faced in the open backyard and closed control shed systems of poultry rearing are parasitism, bacterial diseases like CRD, salmonellosis, infectious coryza and viral diseases like avian influenza, Newcastle disease, infectious bursal disease (Gentile et al., 2023). Fighting these diseases is a big challenge for the poultry farmers although, there are a lot of treatment options including commercially available antimicrobial therapies, but these may fall prey to antimicrobial resistance. Similarly, the treatment of viral diseases is also a serious concern as currently antivirals are very costly and the industry relies on vaccines only. The use of antimicrobials for secondary infections and preventive purposes is also common, rendering poultry meat prone to antimicrobial residues which contributes to the transfer of antimicrobial resistance in the humans in one health preview (Endale et al., 2023). In such aspects besides the herbal medicines which may not provide a sustainable solution for enormous poultry production houses there lies another option referred to as homeopathic medicine.

History

The homeopathic medicine is a well-known alternative medicine that originated in Germany about 200 years ago (Cukaci et al., 2020). Its foundation lies in two unconventional theories: “like cures like” and “law of minimum dose”

(Nengovhela, 2022). These theories refer to the use of substances which may induce similar symptoms and signs of a particular disease in healthy individuals. Homeopathic medicines are manufactured based on a mixture of chemicals, animals, and botanical sources (Thakkar et al., 2020). This alternative medication field has gained much reputation in recent years and is even being used by many veterinary physicians and surgeons around the globe (Prasad et al., 2021). Homeopathic medicines have shown promising results in treating various bacterial and parasitic diseases in food animals and experimental lab animal trials. Similarly, two medications: Fertisigo® and Ovosigo® have been found to improve the eggshell quality and nutritional profile in an experimental trial conducted on Japanese quails (de Souza Eberhart et al., 2021). The underlying study will encompass various important poultry diseases and their remedies which are currently being implied in veterinary facilities around the globe.

Homeopathy in Treating Protozoal Diseases

The parasitic and protozoal diseases play an important role in decline of the poultry industry throughout the world (Mohammed and Sunday, 2015). These diseases are highly pathogenic and cause severe economic losses including high mortality, decreased production and high medicine costs. Farmer is facing a lot of challenges due to such diseases.

Coccidiosis

Coccidiosis is one of the lethal diseases of poultry caused by various species of *Eimeria* parasite which belong to the phylum *Apicomplexa* and family *Eimeriidae* (Berto et al., 2011; Blake et al., 2020). The *Eimeria* parasite mainly affects the intestinal epithelium of birds (Fernando and McCraw, 1973). The severity of disease depends upon the age of bird, immunity, and environmental conditions (Hawley and Altizer, 2011). The characteristic clinical signs of coccidiosis include:

- Loose or watery diarrhea often with mucus or blood.
- Decreased feed intake ultimately led to poor FCR.
- Weight loss due to less feed intake and severe diarrhea.
- Loss of egg production.
- Blood in droppings visible as red streaks or a dark tarry consistency.
- Increase mortality rates due to severe disease.
- Dehydration with the signs of sunken eyes, dry skin and decreased skin elasticity (Mesa-Pineda et al., 2021)

Treatment

Limited availability of modern drugs has very high cost and it also produce antimicrobial resistance in infectious organism ultimately producing a lot of challenges in poultry industry. Medical plants can be used as antidiarrheal, antiparasitic and anti-inflammatory as well as stimulate immunity of birds enhancing their potential as an alternative remedy to commercial drugs. These medical plants include

Common Name	Secondary Bioactive Metabolite	Application
Cyamopsis tetragonoloba taub	Saponins	Reduce chance of coccidiosis in chicken
Vitis vinifera	Proanthocyanidin	Reduce coccidiosis via down regulation of oxidative stress
Phyllanthus emblica	Tannins	Against coccidiosis
Curcuma longa	Curcumin	Reduce gut damage in birds
Olea europaea	Maslinic acid	Enhance anticoccidial index

Histomoniasis

Histomoniasis also known as "blackhead disease" is caused by *Histomonas meleagridis* belonging to phylum Parabasalia and family Dientamoebidae.

Histomoniasis affects chickens, turkeys and other poultry species as well. Signs and symptoms of this disease depend upon severity of infection, species of bird and organs infected. Signs of Histomoniasis include

- Watery foul-smelling diarrhea with greenish or yellowish tint.
- Poor appetite or complete loss of interest in food
- Swollen head and blue comb due to impaired blood circulation
- Pale comb and wattles due to less blood flow and anemia
- Increased mortality in severe disease

Treatment

There are few homeopathic remedies that have been traditionally used in poultry for various ailments including histomoniasis.

- i **Arsenicum album** is a homeopathic remedy used in poultry for digestive disturbances such as diarrhea considered as supportive treatment for histomoniasis gastrointestinal issues.
- ii **Carbo vegetabilis** is used to stimulate immunity and general weakness. It is used in histomoniasis where bird show signs of weakness and require support for their overall viability
- iii **Nux vomica** is mainly used for diarrheal problems.

Ectoparasitic Mites

Ectoparasitic mites such as the Northern fowl mite *Ornithonyssus sylviarum* and red mite *Dermanyssus gallinae* cause infestation in poultry and ultimately affect health of birds. These mites are introduced into flock due to poor management.

Characteristic Signs

Signs of ectoparasitic mites include

- Anemia due to infestation of blood feeding mites
- Intense itching and feather pecking
- Decreased egg production due to anemia
- Restlessness and stress ultimately affect production of birds

Treatment

Few homeopathic remedies also used for treatment of ectoparasitic mites' infestation that include

- i Psorinum is a homeopathic remedy used for mite infestation having effect on itching, skin eruptions and general discomfort
- ii Arsenicum album used for signs of itching, restlessness and anxiety

Tapeworms

Etiology

Tapeworms including *Raillietina* spp. And *Davainea* spp. Infect the intestines of poultry which are ultimately affecting production of poultry.

Characteristic Signs

Tapeworms mainly affect chicken and Turkeys showing given signs of disease

- Watery droppings due to decreased normal bowel movements
- Poor growth due to less absorption of nutrients through intestine
- Less weight gains due to poor FCR
- Potbellied appearance of birds in severe infestation of tapeworms
- Reduced egg production

Treatment

- i **Cina** is a homeopathic remedy that result in expelling of tapeworms from the body
- ii **Teucrium marum verum** is also recommended for tapeworm infestation

Viral Diseases

Newcastle Disease

The Newcastle disease is a serious threat and an infectious and contagious disease of avian species all over the world (Suarez et al., 2020). It is commonly known as "Ranikhait disease" in Pakistan and India (Puro and Sen, 2022). It is caused by a virus Newcastle Disease Virus (NDV) (Ul-Rahman et al., 2022). It has caused losses at vast levels. These losses can be prevented by controlling these viral diseases. Many homeopathic drugs have given beneficial results.

Clinical Signs and Symptoms

- Respiratory distress (sometimes birds make a whistling sound).
- Bright green diarrhea.
- Clear mucus discharge from the mouth.
- Loss of appetite.
- Nervous signs such as paralysis and convulsions.
- Sudden death (sometimes the only finding) (Kumaravel, 2020).

Infectious Bursal Disease

It is a lymphocytolytic disease of poultry chicken, commonly encountered in Pakistan due to a lack of adaptation to biosecurity and intensive farming (Schat, 2022). It causes immunosuppression in birds by affecting the defensive mechanism of poultry and damaging the bursa of fabricius (Orakpoghenor et al., 2020). The IBDV mainly divides into the B cells of the bursa of fabricius (Shah et al., 2021). The control of this disease is by vaccination and proper monitoring of the immune response (García et al., 2021).

Clinical Signs and Symptoms

- Inflammation of the cloaca
- Lesions in the cloacal bursa (bursa of Fabricius)
- Ruffled feathers
- Huddling (Orakpoghenor et al., 2021).

Fowl Pox

Fowl pox is a widespread disease of poultry which is present worldwide, reported in mild to severe form in poultry (Umar et al., 2021). It is present in all types of poultry, but chickens are mostly affected. Frequent cases of pigeon turkeys are also reported, commonly called chickenpox (Ahmed et al., 2022). It is caused by FWPV (Fowl pox virus) (Zhao et al., 2020), primarily in two forms cutaneous and diphtheria (Cui et al., 2023; Umar et al., 2021). The most severe form is the diphtheritic form in which necrotic proliferative lesions on gastrointestinal and respiratory tracts are observed (Shalaby et al., 2021), more deaths are reported in the diphtheritic than cutaneous form (Williams et al., 2021). It is of zoonotic importance as there are some cases of transfer of virus from chicken to human (Izhar, 2021). It is more often in fall and winter. It spreads to poultry by biting mosquitoes.

Clinical Signs and Symptoms

- Yellowish diphtheritic patches in the mouth and throat
- Eyelid swelling and eyes sealed shut or scabbed over
- Reduced water consumption (Kicepa et al., 2023).

Disease	Homeopathic treatment (Common name)	Homeopathic treatment (Scientific name)	Mode of action	References
Newcastle Disease	Pot marigold	<i>Calendula officinalis</i>	immunomodulation effect against different live viruses	(Riaz et al., 2021)
	Licorice and sweet wood	<i>Glycyrrhiza glabra</i> extract	leaves of <i>Glycyrrhiza glabra</i> have strong antiviral activity	(Riaz et al., 2021)
	<i>Andrographis paniculata</i>	Nilavembu extract	extracts have the ability to inhibit the Newcastle disease virus (NDV)	(Riaz et al., 2021)
Infectious bursal disease (Gumboro)	Pot marigold	<i>Calendula officinalis</i>	immunomodulation effect against live virus	(Jaime et al., 2020)
		Livol (herbal supplement)	increase post vaccination humoral immune response	(Jaime et al., 2020)
	Fructus mume (F. mume), an unripe fruit of <i>Prunus mume</i> (P. mume)	Plum (<i>Prunus</i> sp.)	Improve the immune response for chickens inoculated with infectious bursal disease virus (IBDV)	(Jaime et al., 2020)
	Black cumin	<i>Nigella sativa</i>	have an immunomodulatory effect through improvement of the immune system	(Jaime et al., 2020)
Fowl pox	Garlic, indian barberry, false daisy, mango	<i>Allium sativum</i> , <i>berberis lycium</i> , <i>Eclipta alba</i> and <i>Mangifera indica</i>	improved immunity against IBD and ND while enhancing growth performance	(Jaime et al., 2020)
	Monkshood, friar's hood, auld wife's huid and wolfsbane Neem	<i>Aconitum napellus</i> <i>Azadirachta indica</i> L.	prophylactic effect Immunomodulatory and growth promoting	(Bukar et al., 2021) (Bukar et al., 2021)

Homeopathic Treatment of Bacterial diseases

Bumblefoot

Bumblefoot refers to any degenerative and inflammatory condition in foot of poultry (Miesle, 2021). Bumblefoot is also known as pododermatitis (Samour et al., 2021). It is characterized by erythema, ulceration, and swelling. The foot injury is primarily due to the overweight of the bird followed by secondary bacterial infections. Most common occurring secondary bacterial infections are *E. coli* and *Staphylococcus sp* (Manohar et al., 2020). The predisposing factors include wet, hard, or soiled bedding, and overweight. We can avoid bumblefoot by changing the bedding material from wood shavings to wheat straw. The treatment of bumblefoot includes using Arnica mixed with the warm water and given to the birds. Sometimes, in the complicated cases when pus is present in the foot Silica and Hepar sulph are given and *Calendula* can be given externally (Greenacre, 2021).

Fowl Cholera

Fowl cholera is a contagious disease affecting wild and domesticated birds (Izhar, 2021). The etiological agent of fowl cholera is *Pasteurella multocida* (Saha et al., 2021). The subspecies of *P. multocida* includes *gallicida*, *multocida*, and *septica*. Main infection site of *P. multocida* is the respiratory tract. It also has the ability to survive in the gastrointestinal tract. When birds get infected with fowl cholera, a large number of sudden deaths are seen in the flock. According to recent studies, fowl cholera has been treated with *Citrus limon* (a fruit from Rutaceae family). Juice from the fruit has been extracted mixed with water and given to the birds through the water supply. Other natural products used for the treatment of fowl cholera include Neem, Shiferaw, and Shinfae. (El-Saadony et al., 2022).

Prolapse of Cloaca

It is also named as vent prolapse in which cloaca protrudes from its normal position (Lima et al., 2023). During egg laying, the lowest portion of the reproductive tract turns outside for a short duration of time, resulting in laying clean eggs. But sometimes it may not contract back after the laying which causes prolapse. When other birds notice the moist and shiny texture of soft tissue, they start picking the prolapsed area resulting in severe injury to the hen (Ussery, 2022). It will lead to severe blood loss and possible removal of cloaca and fallopian tubes.

Factors Responsible for Prolapse

- 1- Inaccurate management before egg production.
- 2- Nutritional deficiencies in feed.
- 3- Poor development of skeleton during pre-laying.
- 4- Heavy weight breeds are more prone to prolapse.
- 5- The presence of a large amount of fat around reproductive organs.
- 6- Unbalanced feed ration.
- 7- Feed deficient with calcium causes muscle weakness and makes the cloaca harder to retract back into the body.
- 8- Hens which lay double yolked eggs are more susceptible.
- 9- Excessive lighting (King and Hopper, 2024).

Treatment

Immediately isolate the bird and wash the prolapsed area with medicated spray. Carefully push back after lubricating the area. To prevent the prolapse from occurring again, Kali phos works very effectively. For 100 birds, Kali phos 30 @25ml can be given to stop mortality and help in complete recovery (Uluocak, 2023).

Prolapse of the Uterus

Prolapse of uterus is similar to cloacal prolapse (Chourasia et al., 2023). The Uterus protrudes from its normal position and does not retract back after laying egg. It is more common in white leghorn breed. The mortality is high due to excessive bleeding. The prevention is through improved management practices. The homeopathy works very effectively in treating prolapse (Sheeba et al.).

Factors Responsible for Uterine Prolapse

Similar factors are responsible for cloacal prolapse like excessive lighting, inaccurate management, poor skeletal development, various nutritional deficiencies, unbalanced feed, weak muscles and double yolked eggs etc. (Doumouchtsis et al., 2023).

Treatment

Manually push back the prolapsed area after lubrication. The following combination works effectively in prolapse:

- 1- Kali mur 30 @ 5ml
- 2- Ferrum phos 30 @5ml
- 3- Calc fluor 30 @5ml
- 4- Helonias 200 @5ml (Madrewar, 2003).

Sunstroke in Poultry

Birds will always suffer losses in the summer since their bodies' ability to withstand the heat is not fully matured (Nawaz et al., 2021). These losses will increase if the birds have no protection from the heat or sunburn. The mortality rate in young and broiler chicks is greater. In homoeopathic medicine, the following drugs at equal doses are helpful as both preventative and therapeutic measures

Natrum mur 6 100ml

Calcarea carb 6 100ml

Glonoine 30 100ml (Madrewar, 2003).

A mixture of all these can be mixed in 80 liters of water that is sufficient for 800 birds.

The sunstroke is caused by an imbalance in the quantity of heat energy that an animal produces and the net amount of energy that flows from its body to its surroundings. Variations in the combinations of environmental elements, including movement, humidity, sunlight, and thermal irradiation, may be the sources of this imbalance. It is essential for the wellbeing and production of poultry to regulate the environmental conditions (Hafez and Attia, 2020). The heat stress is a significant environmental stressor that chickens face. A reduced development, lowered egg output, decreased egg quality, and decreased safety are just a few of the negative effects of heat stress on broiler and laying hens.

Stress in Poultry Birds

Stress is a reaction to negative stimuli and is hard to characterize and understand due to its imprecise perception (Arnaldo et al., 2022). The SELYE states that "stress is the body's nonspecific response to any demand." Stressor (Appelbaum, 1984), on the other hand, is defined as "any agent that produces stress at any time," meaning that stress is an

animal organism's biological response to a stimulation that upsets its homeostasis, or normal physiological equilibrium. Stress in poultry may result from various factors, including transportation, vaccination, deworming, and debeaking. Homeopathic remedies are just as affordable and potent as other medications that farmers take on a regular basis (Patwardhan, 2005). These work well for treating sunstroke.

Arnica Montana plus Five phos (Madrewar, 2003). This is given 15ml in 5 liters for 100 birds given for the 3 days morning only.

Growth and Production

Poultry birds can convert feed into food products quickly, efficiently, and with relatively low environmental impact (Costantini et al., 2021). As we know, poultry birds are very fast-growing birds being used to meet the meat requirements for human consumption. The high rate of productivity of poultry birds results in relatively high nutrient requirements. The required dietary nutrients for poultry are 38 in appropriate concentrations and balance. These requirements demand that the nutrients be in a highly bioavailable form. Consequently, various feedstuffs should be adjusted based on the bioavailability of nutrients. Different nutrients are required in balanced concentration by the poultry birds for proper growth and development. These nutrients include water, minerals, vitamins, and amino acids. Water is one of the essential nutrients. Different factors influence water intake, including environmental temperature, relative humidity, salt, protein levels in the diet, and birds' productivity. Water deprivation for ≥ 12 hours have a negative effect on the growth of young poultry (Özlü et al., 2020). Poultry, like all animals, synthesizes proteins that contain 20 L-amino acids. The poultry birds lack certain enzymes, due to which they are unable to synthesize particular amino acids (Nte and Gunn, 2021). Different vitamins are required by poultry birds for proper growth and development, and these vitamins are subject to degradation over time. This process is accelerated by moisture, oxygen, trace minerals, light, and heat. Mostly, phosphorus in feedstuffs of plant origin is present in the form of phytate and is not absorbed efficiently by poultry. Consequently, it is critical that only the available phosphorus (digestible) and not the total phosphorus levels be considered. The appropriate calcium nutrition depends on the ratio of calcium to available phosphorus. For growing poultry, this ratio should not alter substantially from 2:1 (Matuszewski et al., 2020).

Alfalfa is very suitable for poultry birds, which have nearly all the required nutrients. Alfalfa contains flavonoids, saponins, dietary fiber, minerals, vitamins, organic acids, and polysaccharides (Barszcz et al., 2022). The above-mentioned bioactive substances have a wide range of bioactivities such as antioxidant, anti-cancerous, anti-inflammatory, and enhancing immunity function. Hence, the alfalfa flavonoids are being used as an additive added to animal feed to enhance the antioxidant activity of serum and liver, meat quality, growth, and production performance. Alfalfa contains flavonoids, which are a group of polyphenol compounds with a C6-C3-C6 carbon skeleton (Chen et al., 2020). Flavonoids are powerful antioxidants based on their polyhydroxyl structures (Shen et al., 2022).

Conclusion

Homeopathic or herbal medicine has been proven very effective against treating various diseases of poultry birds including bacterial, viral, parasitic, metabolic and environmental problems. A variety of herbal medicines is available in the market, and it has been in use for many decades. Efficacy of homeopathic drugs is far greater than any synthetic drug with high safety index. We can use homeopathic medicine without any hesitation for treatment and prevention of poultry diseases. In this chapter we conclude that the natural remedies i.e., commonly used homeopathic drugs are very effective against multiple parasitic, viral, and bacterial diseases of poultry birds. Homeopathic medicine is also used to treat various diseases of the birds which are caused by environmental factors. The naturally occurring parts of the plants including roots, stems, leaves and flowers can be used to synthesize the homeopathic medicine. Homeopathic medicine can be also used for the growth of the birds and increase their production which will ultimately be beneficial for economic growth.

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