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Applied Zoology, Profitable Animal Production, and Health: Current Status and Future  
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# Recent Trends in Applied Zoology

Dr.D.S.Rathod  
Editor

Associate Editors  
Dr. K.S.Raut  
Mr.Datta Nalle

National Edited Book

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Recent Trends in Applied Zoology

**Edited by:** Dr.D.S.Rathod

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## Chapter -23 Use of Indian natural therapies for animals, affordable, and Eco- friendly

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### **Abstract:**

India has a diverse and abundant floral population. Synthetic medications are viewed as potentially dangerous, poisonous, and expensive. Herbal remedies, in comparison, are less harmful, more affordable, and environmentally friendly. They have also been utilised by the locals for many years. They have also been applied to regular animal healthcare issues. Plants are the source of 25% of all medicines given globally. In various Indian states, about 75% of therapeutic plants are naturally growing. Many problems in animals, including poisoning, coughing, constipation, foot-and-mouth disease, dermatitis, cataracts, burning, pneumonia, bone fractures, snakebite pain, gastrointestinal discomfort, and skin diseases, are known to be treated by these plants. There is little literature review of this topic (veterinary herbals). The manual and electronic searches.

**Keywords:** veterinary herbals

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### **An Overview**

The rising number of people are turning to herbal medications since they are thought to have negligible or no negative effects. 80% of people in Asian and African nations rely on traditional medicine for their basic medical requirements. Traditional herbal treatments are the most profitable type, bringing in billions of dollars annually. Since 40% of the plants include essential components that can be used to make prescription pharmaceuticals, researchers look to traditional remedies as a guidance.[1] According to reports, the global market for herbal products was worth \$80 billion in 2011–2012. The Indian herbal products market is about

Traditional medicine (herbal medicine) is defined by the World Health Organisation (WHO) as "the total of the knowledge, skills, and practises based on on the theories, beliefs, and experiences from other cultures, whether or not they can be explained, that are used to maintain health as well as help prevent, diagnose, treat, or improve physical and mental illness.[2]

About 25% of current medications are known to have originated from plants that were originally used traditionally. Three out of four patients with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) in Africa, North America, and Europe utilise some type of conventional treatment for a variety of symptoms and problems. Traditional medicine makes up between 30 and 50 percent of all consumption in China. In China, there are about 800 herbal product firms with a combined yearly output of US dollar 1.8 billion. In India,

traditional medicine is widely practised, especially in rural areas where 70% of the country's population

Herbal remedies used in veterinary medicine include plant-based medications used for therapeutic, preventative, or diagnostic purposes in animal healthcare. The use of herbal medicines for both human and animal health care has a long history that dates back thousands of centuries.

In India's rural areas, veterinary medications cover the smallholders' knowledge, abilities, procedures, practises, and beliefs around the care of their livestock. Due to financial constraints, these smallholder farmers are unable to invest in the high-quality care of their animals; in contrast, high-end medical treatment is typically provided by costly but powerful synthetic medications. The consequences of synthetic pharmaceuticals, such as harmful compounds that stay in meat and antibiotic residues that cause antibiotic resistance in people, are side effects of these drugs.[4]

Medicinal herb contains a different combination of pharmacologically active chemicals, and they all have different qualities. The components in many herbs (whole plants) have many actions that are combined to make a single medicine. In the interest of animal health, it would be prudent to consider the risk-benefit ratio based on the available scientific information and the prescriber's experience.[5]

Medicinal herb for blood disorder and low immunity are taking much attention. The immune system is simultaneously the most challenging and self-evident to address of all the systems covered in this section. Practitioners are commonly asked how to "stimulate the immune system," but scientists and herbalists agree that due to the intricacy of immune function, such an approach is at the very least naive and at the very best, not advised. Immune function is an ecological balance that the body achieves with the help of endocrine and neurologic processes. It has also been acknowledged that not all of the "invaders" that the immune system fights are harmful; in fact, we might need bacteria and viruses to keep our immune systems functioning normally and to prevent tumour growth.

Every attempt to alter immune function must consider the Practitioners are commonly asked how to "stimulate the immune system," but scientists and herbalists agree that due to the intricacy of immune function, such an approach is at the very least naive and at the very best, not advised. Immune function is an ecological balance that the body achieves with the help of endocrine and neurologic processes. It has also been acknowledged that not all of the "invaders" that the immune system fights are harmful; in fact, we might need bacteria and viruses to keep our immune systems functioning normally and to prevent tumour growth.

The patient's link to all immune system activities as well as the environment's microbial impacts that interact with the immune system's forward defences must therefore be considered in any attempt to modulate immune function.

Due to our poor understanding of the complexity of immune function, traditional ideas of clinical disease and empirically established treatments may be even more helpful than evidence-based recommendations in this regard. Instead of just treating the bone marrow and secondary immune organs, we must treat the patient as a whole. . Due to our poor understanding of the complexity of immune function, traditional ideas of clinical disease and empirically established treatments may be even more helpful than evidence-based recommendations in this regard. Instead of just treating the bone marrow and secondary immune organs, we must treat the patient as a whole. Similar to this, blood diseases include more than simply the bone marrow. For instance, hyperlipidemia in adults is almost always a problem with lifestyle rather than merely a blood issue.

Despite the fact that the focus of this section is immunological and blood disorders, each condition listed needs a comprehensive approach to therapy. Herbs naturally have multifaceted effects that address multiple abnormal bodily processes. Instead of just treating the bone marrow and secondary immune organs, we must treat the patient as a whole.

Similar to this, blood diseases include more than simply the bone marrow. For instance, hyperlipidemia in adults is almost always a problem with lifestyle rather than merely a blood issue. Despite the fact that the focus of this section is immunological and blood disorders, each condition listed needs a comprehensive approach to therapy. Herbs naturally have multifaceted effects that address multiple abnormal bodily processes.[6]

**Medicinal fungi** Polysaccharide complexes and sterols found in all of these fungi appear to improve cell-mediated immune function and may also have anticancer properties. Although some of the basic constituents have structural variances, it's plausible that these distinctions affect how the constituents behave in vivo. In general, aqueous or dried preparations have a higher likelihood of entirely extracting polysaccharide complexes like those found in medicinal fungi than alcohol extracts do. [7]

According to Preininger [8], berberine is beneficial in treating diarrhoea brought on by enterotoxins such *Vibrio cholerae* and *Escherichia coli*. Studies on hamsters and rats both in vivo and in vitro have shown berberine to have a considerable anti-*Entamoeba histolytica* effect (9). According to various clinical investigations, berberine has had a considerable impact on the treatment of individuals with acute diarrhoea. *Escherichia coli*, *Shigella dysenteriae*, *Salmonella paratyphi B*, *Klebsiella*, *Giardia lamblia*, and *Vibrio cholerae* have all been linked to diarrhoea .

Use of *Matricaria recutita* The oil has been shown to exhibit antibacterial activity against gram-positive bacteria as well as antifungal activity [10] *Thymus vulgaris* According to Meybe (1988), this herb has anthelmintic, antibacterial, and antifungal activities, particularly with regard to hookworms. Thymol and thyme oil have been studied for their antibacterial properties. A variety of species are resistant to the antifungal effects of thymol, carvacrol, and thyme oil (Mitchell, 1979).

Antiprotozoals Propolis, *Artemisia annua*, berberine-rich plants, and *Euphorbia* (*Euphorbia hirta*) are all antiprotozoal substances. Several flagellated parasites may also be successfully treated with essential oils as a therapeutic or preventative measure.



Mechanical stimulants, volume purgatives, irritant purgatives, and neuromuscular purgatives are all examples of laxatives. By covering the mucosa, mechanical stimulants like paraffin oil can prevent nutrients from being absorbed. In tiny animals, liquid paraffin may actively stimulate the ongoing existence of fecoliths since the oil makes it easier for soft faeces to pass through solid masses, which will not benefit and may worsen chronic constipation or impaction.

Bulk laxatives increase the amount of intestinal contents, which causes the intestines to distend and triggers a response that causes the muscles to contract and increases the force and speed of peristalsis. These include seaweeds, wheat bran, and plantain seeds (psyllium). The mucilage in herbs has swelling qualities that allow it to absorb water in the digestive tract, increasing the volume of the faeces and encouraging peristalsis. These laxatives are especially helpful when sharp foreign bodies (such as needles, sharp bones, or stones) have been swallowed. They only have modest stimulant effects. Bulk laxatives shorten the time it takes for food to move through the digestive system, which can cause other medications to take longer to take effect.[11] *Cassia angustifolia* This herb has sublaxative effects, which make bowel movements soothing, regular, and soft, even at extremely low doses. It has a laxative or purgative action at higher doses. In eight conscious dogs, the effects of sennosides on colonic motility were examined. After a 3- to 6-hour delay, oral sennosides (30 mg/kg) slowed intestinal motility for 12 to 18 hours and were linked to large contractions and diarrhoea. The lowest oral sennoside dose required to cause these effects ranged from 5 to 15 mg/kg. The effects of oral sennosides were replicated by intracolonic sennosides at the least effective dose and at 30 mg/kg, albeit with a shorter latency (0.5-1.5 h). According to this study, sennosides' colonic motor activities are mediated via local prostaglandin production.

## Conclusion

It is clear that the majority of the medications for animal health care listed in this review are made from leaves. For treatment, often newly harvested plant material or plant parts are employed. This article thus covers the broad range of herbal medications that can be utilised to treat human ailments. Manufacturers of veterinary herbal formulations are advised to apply the IP standards with regard to these herbal medications.

## Reference

1. Kunle OF, Eghavevba HO, Ahmadu PO. Standardization of herbal medicines- A review. *Int J Biodivers Conserv.* 2012;4:101–12.
2. Kokate. Human resources, advanced infrastructure can spur Indian herbal industry growth. [Last accessed on 2014 Jul 103.
3. Phondani PC, Maikhuri RK, Kal CP. Ethnoveterinary uses of medicinal plants among traditional herbal healers in Alaknanda catchment of Uttarakhand, India. *Afr J Tradit Complement Altern Med.* 2010;7:195–206.
4. Kamboj VP. Herbal Medicine. *Curr Sci.* 2000;78:35–9.
5. IPC . *The Indian Pharmacopoeia Commission.* Vol. 3. Ghaziabad: 2014. Indian Pharmacopoeia 2014; pp. 3165–284.
6. *Food and Drug Administration.* Rockville, Maryland, USA: Anon; 2002. Center for Drug Evaluation and Research, Center for Biologics Evaluation and

Research. Estimating the safe starting dose in clinical trials for therapeutics in adult healthy volunteers. U.S; pp. 1–26.

7. Ooi VE, Liu F. Immunomodulation and anti-cancer activity of polysaccharide-protein complexes. *Curr Med Chem.* 2000;7:715–729.
8. Preininger V. The pharmacology and toxicology of the Papaver-aceae alkaloids. In: Manske RHF, Holmes HL, editors. Vol. 15. Academic Press; New York: 1975. p. 239.
9. Pizzorno JE, Murray MT. *Textbook of Natural Medicine.* John Bastyr College Publications; Seattle: 1985. *Hydrastis canadensis, Berberis vulgaris, Berberis aquifolium* and other berberine containing plants.
10. European Scientific Cooperative on Phytotherapy). *Monographs on the Medicinal Uses of Plant Drugs*, Fascicules 1 and 2(1996), Fascicules 3, 4, and 5(1997), Fascicule 6(1999).
11. Daykin PW. *Veterinary and Applied Pharmacology and Therapeutics.* Tindall & Cox; Bailliere: 1960. p. 78.
12. Staumont G, Fioramonti J, Frexinos J, Bueno L. Changes in colonic motility induced by sennosides in dogs: evidence of a prostaglandin mediation. *Gut.* 1988;29:1180–1187.