

Need to Strengthen Herbal Veterinary Sector

Shradha Gupta, Raturaj Patil, K. Narender Reddy, Prashanth D'Souza, R. K. Agarwal and Amit Agarwal
Natural Remedies Pvt. Ltd., Bangalore.

Introduction:

Agriculture is an important sector of Indian economy as it contributes 17% to the total GDP. The contribution of livestock to GDP was 4.70% in 2004-05 at 1999-2000 prices. For low income producers, livestock serves as a store of wealth, organic fertilizer for crop production and means of local transport. Meat as main diet in developing countries is still not realized to its potential. In India, consumption of meat and its products is culturally and religiously interlinked. Consumption of meat and its products in developing countries is growing rapidly due to increase in source of income in middle class and lower middle class families. In this scenario, animal health care has far-reaching implications. But effective and comprehensive animal health care is expensive which is currently in practice in most developed western nations. In remote and rural areas, where livestock is abundant small-holders are unable to spend on quality health care for their livestock, mainly due to non-affordability; whereas, high-end healthcare is mainly met by expensive yet effective synthetic drugs. The side effects of synthetic drugs such as presence of antibiotic residues leading to the problem of anti-biotic resistance in humans, toxic metabolites remaining in meat and byproducts are a matter of concern in long term usage of synthetic products. Besides, this health care is unaffordable to most of Indian livestock owners. Sometimes, access to health care is rarely realized due to remoteness of villages. Such issues have promoted use of herbal preparations which are considered to be relatively safe and affordable to rural folk. Further, absence of antibiotic or toxic residues in meat and milk products has also encouraged herb based health solutions in veterinary healthcare sector. Thus, traditional herbal medicines in veterinary practice have great potential as an alternate therapy. Throughout this article, we have used the words 'herbal products' which include Ayurvedic, Siddha, Unani and Homeopathic medicines apart from plant based animal feed supplements.

Ethno-veterinary medicine is more accessible to farmers, is cheaper to obtain, suitable for small-holdings, eco-friendly in nature and often more socio-culturally acceptable. Amongst all the traditional medicine options, the Ayurvedic medicines are the only form of medicines currently been practiced in India which have grown from being a simple folklore to more science based medicines. Due to advancements in science, analytical methods and process technologies; more precision, accuracy and safety has been brought into herbal veterinary drugs. However, the sector needs further improvements in several areas.

According to International Food Policy Research Institute (IFPRI) estimates, by 2020, developing countries will produce an average of 40% more meat and 60% more milk per capita than in the early 1990s. Such dramatic increases provide opportunities in human nutrition, food security, poverty alleviation, food prices and even public health. Surge in production rate will have to commensurate with proportional animal health care system, both preventive and curative, than what it is now.

Indian Livestock status:

- The population of different livestock species as per the 18th

livestock census 2007 (19th livestock census is due in Aug 2013), places India at first rank for having the largest buffalo population, second in reference to cattle and goats and third in reference to sheep populations. India has the fifth largest poultry population in the world.

- The contribution of the livestock sector to agriculture is about 22 percent which contributed 4-6% of the National GDP during the last two decades.
- The comparison of the livestock population has also undergone significant transformation. Within cattle, there has been a marked shift from work animals towards milch animals. As a result, the number of crossbred cows has increased from 3 million to around 10 million.
- India is currently the largest producer of milk in the world with production of 127 million tones / annum. Operation Flood - a National Dairy Development Board project aimed at boosting the country's milk production and consumption - helped increase per capita milk consumption from 124g/day in 1950-51 to 273g/day in 2009-10 (www.nddb.org).
- Per capita consumption of poultry meat is 2.8 kg/annum and egg consumption 55 numbers/ annum. Consumption is expected to grow by 15% per year (<http://icra.in/Files/ticker/SH-2013-1-ICRA-Poultry.pdf>).

Table 1: Global Livestock Population, 1970-2010

	1970	2010
	(million)	
Buffalo	107	194
Cattle	1081	1428
Goats	377	921
Sheep	1063	1078
	(billion)	
Chickens	5.2	19.4

Source: UN Food and Agriculture Organization, FAOSTAT, updated Feb 2012

Ayurveda in animal health:

In ancient India, due to religious and emotional value, use of animals in agriculture, transportation, food and on the battle fields, the need for animal welfare was well recognized.

Ayurveda describes many treatises like *Gau-ayurveda* (cows), *Hastyayurveda* (elephants), *Ashvayurveda* (horses), *Mrig-Ayurveda* (animal), *Vriksha-ayurveda* (plants) etc. It is known that the two Pandavas, Nakul and Sahdev were experts in veterinary medicine who mastered the use of plants for animal welfare. The vast knowledge has been documented in Nakul Samhita. Unfortunately, most of these rare books have not been preserved adequately. A majority of them are either not available at all or have been out of print for several decades. There is an urgent need to conserve the rich Indian tradition of veterinary health care described in the ancient Ayurvedic sciences. In the Schedule 1 of Drugs and Cosmetics Act,

*Email Id: johnson@naturalremedy.com

more than 57 official books are listed; however none of them are dedicated to veterinary Ayurveda. Several veterinary specific dosage forms are yet to be included in the Ayurvedic formulary of India or in a separate Ayurvedic Veterinary Pharmacopoeia of India.

Herbal/veterinary Ayurvedic products (VAP) currently cover following major segments:

1. Digestives, 2. Liver support agents, 3. Lactation promoters, 4. Nutritives/Tonics, 5. Anti bloating agents, 6. Anti stress agents, 7. Anti diarrheal agents, 8. Uterine tonic / ecboic agents, 9. Immunomodulators

Status of herbal veterinary products:

Among these the liver tonic segment is identified as one of the popular segments in terms of growing use of Ayurvedic formulations in veterinary industry. *Post-partum* problems faced by farmers are addressed by Ayurvedic and ecboic formulations. As a support therapy in anti- mastitis segment, herbal solutions in the form of spray or creams have carved a good place in the industry due to the herbal properties manifested as anti-inflammatory or as cellular immunity booster to counteract udder infections. The anti maggoticidal and fly repellent properties of specific herbs have paved the way for herbal dermatological sprays and gels globally in a big way. With growing awareness on the need to reduce animal stress for better productivity and quality demand for herbal immunomodulator is pacing up not only in poultry but also in large animal sectors. Further, restrictions on use of chemical galactogogues (for e.g., use of oxytocin for letting down milk) have contributed towards growing demand of natural milk boosters. In general, herbal products have mainly addressed the metabolic disorders of cattle, sheep, poultry and other species. Majority of these products, which have been evaluated as per the guidelines of modern medicine, are prescribed by qualified veterinary doctors across the country. A few products which have been in the market for several decades have become OTC. The animal feed supplements are recommended by consultants and advisors to the feed manufacturers.

Current regulatory status:

Veterinary Ayurvedic Products (VAPs) are regulated under the Drugs and Cosmetics Act 1940 – 1945 and Rules there under. Pre market licenses have to be obtained for introducing VAPs in the market. As in case of human medicines, the law permits “Classical Ayurvedic Veterinary Medicines” and “Patent & Proprietary Ayurvedic Veterinary Medicines”. The Classical Ayurvedic Veterinary Medicines are prepared as per the formula and procedures given in ancient books of Ayurveda while Ayurvedic Patent & Proprietary medicines are new combinations made using herbs which are recognized and accepted in the official books listed under Schedule I of the Act.

The Departments for Animal Husbandry in the Central Govt. and in the state Governments oversee all aspects relating to the regulation of veterinary education, practice and drug manufacture. Enforcement is carried out by authorized central and state government organizations.

Currently, the VAP industry adopts the same quality parameters prescribed for raw herbs, extracts, minerals mentioned in The Ayurvedic Pharmacopoeia of India or The Ayurvedic Formulary of India.

Current issues facing herbal veterinary industry:

Raw material supply: Quality of raw material as well as end products has become major criterion for business development. At the same time, availability of quality raw material is a major concern for Indian manufacturers for a variety of reasons. The presence of heavy metals (for e.g., Lead, Mercury, Arsenic, Cadmium etc),

pesticide residues, adulteration and un-intentional mixing of raw material are just few examples. Further, when raw material is in short supply, spurious adulterants are mixed with original raw material to meet the demand. According to one survey, 20% of raw material is invariably contaminated with adulterants. Major reasons for poor quality of raw material are i) unripe harvesting, ii) mixing of inferior and cheap plant parts and iii) mis-identification of species. In order to ensure continuous supply of raw material promotion of contract cultivation of high volume and endangered plant species is recommended. There is a greater demand for cultivated material. With this approach one can ensure availability of quality raw material devoid of spurious material and pesticide residues. However, for many reasons, the majority of raw material is sourced from wild. One of them is cost. Economic feasibility is the main objective for a decision to bring a species into cultivation. Here, cultivated material competes with material harvested from wild that is supplied by commercial gatherers who have not incurred any input cost for cultivation. Therefore, low prices will ensure commercial cultivation profitable. In spite of greater demand for cultivated raw material, farmers are reluctant to the idea due to high input costs. Lack of agronomy practices, experience in medicinal plant cultivation, non-availability of quality planting material are few more reasons for failure of large scale contract cultivation.

Strong R&D base addressing safety, efficacy of veterinary products: Improvement in processing methods can limit wastage of marker/active compounds during extraction. A large amount of precious medicinal plants remain unfit for use due to problems of pesticide, mycotoxin or heavy metal residues. There is a need to understand the source/root cause of such contaminants and develop industrial scale processes to selectively remove them for compliance to international standards. The knowledge on post harvest technology of most medicinal plants is need of the hour.

Quality control issues such as presence of pesticide residues, heavy metal traces and microbial contamination: Improper primary processing of raw material at the time of collection is leading to severe bacterial and fungal contamination which is rejected during quality control measures. Lack of awareness to herb collectors on post-harvest processing, lack of proper storage and drying facilities at the point of collection of raw material are primary causes for contamination of raw material. Industry, Government agencies, NGOs and Forest officials should come forward to organize periodic awareness camps to herb collectors on sustainable harvesting methods, primary processing techniques which will greatly enhance quality of raw material reaching factory gate. As herb collectors living standards are poor, providing suitable drying yards, local transport can improve the quality of raw material. Arranging quick transport can reduce transit time if material is of perishable nature.

Currently methods for detection of pesticide residues are available; however, certain specific parameters for newly introduced pesticides are yet to be developed. Often obtaining reference standards for method development is a challenge. As described earlier, contamination levels can be reduced at the cultivation level and procurement stage if primary processing techniques are implemented. Resorting to organic cultivation, contract cultivation under controlled conditions, and grading of dried raw herb are some measures that can help improve quality.

Clinical trials: Unlike in human herbal products, veterinary products lack facilities to conduct clinical trials, because such activity needs huge investment. Currently, there is no CRO (contract research organization) to carry out clinical trials on target species.

Need for common platform of herbal veterinary manufacturers: There is no common platform to voice out/

addressing issues related herbal veterinary manufacturers. It is necessary to advice regulators, government agencies and ministries and to represent Indian herbal veterinary manufacturers for the benefit of animal health, livestock owner community and society at large. Such a platform will work closely with stake holders and advice government on relevant policies needed for herbal veterinary sector from time to time.

Recommendations:

Prioritizing ASU veterinary sector:

Ayurvedic Veterinary medicines are sold based at a relatively lower cost compared to modern medicine. While the traditional products are cheaper, the main ingredients being medicinal plants are becoming more and more expensive. As a result, Ayurvedic veterinary medicine is losing its major edge over allopathic drugs. There is a need to encourage research and simplify regulations so that manufacturers can use cheaper alternatives as substitutes. However, unless the regulations envisage and encourage the cost- effectiveness issue the problems will only escalate. The Ayurvedic veterinary sector is still small but it has a huge potential given the interest in natural products and the large global population of animals and poultry that can be treated for at least some conditions without resorting to the use of chemical drugs. Greater encouragement to R&D and awareness building through the Animal Husbandry camps and schemes would also provide an impetus but bridges need to be built to create an interest and an understanding.

Separate section for ASU (Ayurveda, Siddha and Unani) veterinary sector at AYUSH dept.:

There is a need to initiate inter-ministerial dialogue / cooperation between the Department of AYUSH, Ministry of Health and Family Welfare and the Department of Animal Husbandry, Ministry of Agriculture. Within the Department of AYUSH, there should be at least a Director level officer who can understand the specific needs of the veterinary sector and facilitate the approval of regulations apart from suggesting modifications as necessitated by experience. There are several government notifications which have been issued keeping only the human application of ASU medicines in mind. There is a need to either exempt ASU veterinary medicines from the purview of such notifications or to look into their applicability for the veterinary sector.

Representation of the herbal veterinary sector in ASUDTAB:

The Drugs and Cosmetics Act, 1940 and Rules 1945 have provided a specific provision of creating an apex body called ASUDTAB (Ayurveda, Siddha, Unani Drug Technical Advisory Board). As per the Act the constitution of this Board requires representation from the relevant industrial sectors. However, as of now, the current DTAB does not have any representative from the veterinary sector. Due to this, in the past, the specific issues of the herbal veterinary sector have not been addressed till date. Such an inclusion can ensure that the concerns of the sector are adequately communicated to the apex body which is meant to advise the dept. of AYUSH from time to time.

Training veterinary manpower on Practice of VAPs:

Veterinary health care is in the hands of veterinary doctors (VDs), veterinary livestock inspectors (VLIs), artificial insemination workers (AIWs) and village level workers (VLWs). All been estimated, there are around 25,000 qualified vets and 80,000 (VLIs, VLW's and AIW's) engaged in the veterinary sector¹. The

number of veterinary doctors being limited, they generally attend to serious and complicated cases only. A vast majority of the common metabolic disorders (which are generally self limiting and non-life threatening) are attended to by VLIs, VLW's and AIW's. Most of the licensed Ayurvedic drugs are meant for common metabolic disorders. There is a need to encourage the paramedical veterinary manpower to understand the benefits of traditional veterinary medicine. Companies engaged in the manufacture of Ayurvedic veterinary products should be encouraged to impart know-how and training to the paramedical workers.

Need to prepare an Ayurvedic Veterinary Pharmacopoeia:

There is a need to prepare and publish a separate Ayurvedic Veterinary Pharmacopoeia covering the VAPs (Veterinary Ayurvedic Products). A separate veterinary Pharmacopoeia has been published in the case of synthetic drugs and pharmaceuticals (Published by Indian Pharmacopoeia Commission). It is understood that the newly formed Pharmacopoeia Commission for Indian Medicines (PCIM) has formed a Veterinary Ayurvedic Committee to initiate this work. However, the availability of resources and the availability of lab facilities needs to be looked into.

Conclusion:

In this article, we have highlighted current status of herbal veterinary sector and also pointed out major scientific and technical issues that are needed to support the sector. Further, recommendations were made at regulatory level that can be taken up by the Government for implementation. When scientific, technical and regulatory issues are addressed together, it will help herbal veterinary industry as a whole and subsequently country's economy.

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