

A Comprehensive Review on Ayurveda and Animal Science: Short Communication

Mahesh Kumar^{1*}, Reena Jaiswal², Hemanta Panigrahi³

¹ Assistant Professor, Department of Shayla Tantra, Chaudhary Brahm Prakash Ayurved Charak Sansthan (CBPACS), Khera Dabar Najafgarh New Delhi, India

² Associate Professor, Department of Shalya Tantra, MGACHRC Wardha, Maharashtra, India

³ Research officer, CARI-CD Punjabi Bagh, New Delhi, India

ABSTRACT:

Ayurvedic medicine provides valuable knowledge not only for *Manav swasthya* (human health) but also for the care and treatment of *Pashu* (animals). A core principle of Ayurveda's approach to *Pashu Vigyana* (animal science) is the compassionate and ethical treatment of all living beings. Animals are not only sources of food and therapeutic products, but their body parts and by-products are also used in traditional Ayurvedic remedies. Preclinical research plays a crucial role in biomedical studies, where new drugs, treatments, and toxicity levels are first tested on animals before moving to human trials. While Ayurveda has addressed aspects of use of animals and animal products in therapy, animal care, there is still a lack of systematic work concerning veterinary practices and the use of animals in laboratory research. This manuscript seeks to explore the role and status of animal science within the framework of Ayurveda. Information was gathered from classical Ayurvedic texts and online resources, then organized and presented in a structured manner. Ayurveda emphasizes compassionate treatment for all living organisms. Historically, animal sciences were well-developed in forms such as *Go Ayurveda* (focused on cows), *Ashwa Ayurveda* (horses), and *Hastya Ayurveda* (elephants). Ancient Ayurvedic literature contains detailed insights into animal care, classifications, ethics, health management, therapeutic uses, and the application of animal-derived substances in medicine. To advance laboratory animal research in the Ayurvedic context, greater awareness and scientific rigor are needed. This initiative aims to encourage young researchers to engage with and further develop animal science in Ayurveda.

KEYWORDS: Animal science, Animal research, *Ashwa-Ayurveda*, *Go-Ayurveda*, *Hastya-Ayurveda*, *Pashu Ayurveda*.

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***Corresponding Author:**

Dr. Mahesh Kumar

Assistant Professor, Department of Shayla Tantra,
CBPACS Khera Dabar New Delhi, India

Email: drmkguptabhu@gmail.com

INTRODUCTION:

The animal science is studying about animal biology that are in control of man ^[1]. India has a rich diversity of flora and fauna and their references available in ancient classics. The indigenous system of medicine (AYUSH) includes *Ayurveda*, Unani, Siddha, and Homeopathy ^[2]. Among these, the *Ayurveda* is rich in diversity of organisms. The distinctiveness of *Ayurveda* is that it deals with the care of humans as well as other animal. The humane care of human, plants, and other animals are accepted. The available literature on *Ayurveda* shows that *Ayurveda* covers the whole creature of god in *Manava-Ayurveda* (medicine of humans), *Pashu Ayurveda* (medicine of plants), and *Vriksha Ayurveda* (medicine of plants) ^{[3][4]}. As the evolution occurs, human care evolved more for *Ayurveda* shows more devotion. The *swasthasya-swasthya rakshanam* (care of the health of healthy one) and *vikaroprshamanam* (treatment of diseased one) are the main motto of *Ayurveda* ^[5].

Animal resources have a major contribution to the medical community and are a rich source of many natural products. *Ayurveda* mentions the animal kingdom as “**Jaangam**”. The *jaangam dravya* are animal source medicine, the products obtained from animals and used in therapy ^[6]. These *jaangam* are again classified into four categories *Jarayuja*, *Andaja*, *Swedaja*, *Udbhija* (*Susbruta sutra sthana* chapter 1) as mentioned in Table 1^[7]. Their body parts (like liver, bone, and muscles), products (like milk, urine, feces, etc), dosha, dhaatu, mal, pitta, rakta etc. work as drugs in *Ayurveda*. ^[8] The reason behind this is “*Saamanya yogaad vriddhi viparyayaat braasha* (mechanisms of increase (*Vriddhi*) and decrease (*Kshaya*) in the body – *Nyaya-Vaisheshika Darshan*) ^[9].

Among the four types of living beings—*Swedaja* (those born from sweat), *Andaja* (those born from eggs), *Udbhija* (those

emerging from the earth), and *Jarayuja* (those born from the womb)—humans are considered the highest, while the other three exist in supportive roles. (Table-1).^[10]

Historical aspect

Ayurveda has a description of eight branches (*Ashtanaga Ayurveda*) including *Kayachikitsa* (internal medicine), *Shalya chikitsa* (surgery), paediatric, toxicology etc. ^[11]. Along with these the description of other dimensions also seen like *Sanyachikitsa* (responsibility of clinician during wartime), *Agadtantra* (toxicology), pharmacology, *Vruksba-Ayurveda*, *Pashu-Ayurveda* etc ^{[12][13][14]}.

In Indian culture, the society considered the cattle as wealth and they are part of life as they live with animals, an amenity the animals, gift animal as a wealth, pray for animals, cow culture, and cow pray, etc. As per historical view, the science of veterinary was of top importance. The literature available on elephants, horses, cows, etc. along with their experts shows its significance ^[15]. In *Veda* the citation is available to pray to god for the care of cows.

Atharvaveda has a description of the ailment of animals and their treatment. The *Shalibotra*, an author of *Haya-Ayurveda* (*Ashwa-Ayurveda*) is the first known veterinarian skilful in horse husbandry ^[16]. Also, Sage *Palakapya* write the text *Gaja Ayurveda* dealing with elephant husbandry ^[17]. About *Mahabharat* (1000 BC), Nakul and Sahdeva are expert Pandav brothers in horse and cattle husbandry respectively. The description of *Pashu-adhyaksha* (superintendent of animals) is available in *Kautilya Arthashastra* for cows, horses, and elephants. Description of *Pashu chikitsa* is also mentioned in *shilalekha* (pillars) of emperor Ashok (268 BC-232 BC). The reference of various books on animal science was mentioned by *Albaruni* in medieval periods. The treatment of

Elephants, Horses, Camels, Cows, Goats, etc animals is described in *Charak Sambhita siddhi sthana* chapter 11/19-26^[18]. *Ayurveda* text shows kindness for all animals (*bhuteshmanukrosam*), care of livings (*parrobbhutada dharmam*)^[19]. Animal science in Ayurveda covers ethical conduct, treatment of sick animals, medicinal use of animals and their products, and animal behavior in response to toxins. The thinking of meat selection, types of meat on basis of their sources, avoidable meats are mentioned in texts. Except for a few situations like the use of *mansharasa* (juice of meat), non-vegetarian foods, mostly animal products are used in treatment.

Animal science: *Pashu Ayurveda (Pashu Chikitsa)*

In ancient classic, the animals were used in agriculture work, transportation, source of food, source of milk, sacrificial rituals and ware fare, animal products as drugs etc. Also, description of the treatment of diseased animals to keep them healthy is seen. Drug exposure is also seen towards animals like elephants, horses, cows, etc. The horse and elephant are used for travel as a vehicle in society, in war, *Ashwamedhya Yagya*, etc. There are three branches of *Pashu Ayurveda* (animal science). The *Ashwa Ayurveda* (medicine of horse) is the branch of *Pashu Ayurveda* that deals mainly with the care and use of Horses. The *Hastya-Ayurveda* (medicine of elephant) is the branch of *Pashu Ayurveda* that deals mainly with the care and use of Elephants. The *Gou-Ayurveda* (medicine of cattle)^[20] is the branch of *Pashu Ayurveda* that deals mainly with the care and use of Cows. Veterinary science is documented in some of the oldest texts of ancient Indian literature. Notable works related to animal science are listed in Table 2^[21].

Contribution of Animal in treatment

Ayurveda works on basic principle of *Panchmahaboot Siddhanta* (five element theory)^[22]. Also accept that not a single drug of *Ayurveda* things in the world is non-medicinal because each one has *Panchbbhautik* properties (*sarva dravyam panchbbhautikam, naanousdhi bhootam jagat kinchit - Charak*)^[23]. Following these principles, animals were used for therapeutic purposes since the ancient era. Both pharmacological and non-pharmacological parts of drugs (*Aushadh & Bhesaja*) are described in *Ayurveda*. The *Stbalwar* (plant origin), minerals, and *Jangam* (animals) are the source of drugs. Animals are used as food substances for the non-vegetarian person and as a drug in a diseased person. Animals play an integral part in various *Ayurveda* treatment modalities. Leech therapy (*Jalaukavacharana*), Maggot therapy (*Krimi Utpatthi Chikitsa*) are popular treatment modalities^{[24] [25]}.

Animal ethics

At present, there is well established regulatory act and guidelines for systematic work conducted on animal research and experimentation like PCA act 1960 (prevention of cruelty on the animal), CPCSEA (Committee for the purpose of control and supervision of experiments on animals) guideline, IAEC (institutional animal ethics committee) etc.^{[26] [27] [28]}. The *Ayurveda* has a description of animals in their literature. The ethics (moral) for the animal are similar to humans. All the organisms of the earth have their respect and *Ayurveda* does not advocate any cruelty to animals. A review of ancient literature reveals that systematic and distinct guidelines on animal research and experimentation are not easily traceable. *Ayurveda* advocate humane care for all, advice no cruelty on animals, mentioned in *Sadvritta* part (good moral conduct)^[29].

Experiment on animals:

The verse related to care and treatment of animals is excessively available in *Ayurveda* literature but the straightforward reference of experiments on animals is not realized in the literature search. A reference to test the toxicity of food prescribed for the king on birds and animals. The findings mentioned as after eating toxic food, *Corvus splendens* (Crow) voice become weak, *Musca nebula*(fly) avoid sitting on it or may die after, Parrots (*Psittacula eupatria*) produces loud voices, Monkey excretes faces, etc (*Ashtanga Samgraha Sutrasthana* chapter 8/23) ^[30]. It is assumed that the ancient seers mentioned the principles, surgical and para surgical procedures, drugs property on their own experience and intellect and that are acceptable till now. As science grows the *Ayurveda* fraternity now accepting the importance of experimentation and starting it in the scientific atmosphere.

Animal products as a drug:

According to Ayurveda, nothing in the world is without medicinal potential —

every substance can serve as a drug. This principle is rooted in the Panchbhautik Siddhanta and expressed through the concept “*nonoushadibbutam jagat kinchit*” emphasizing animal and their products, body parts are maybe a drug ^[31]. Ayurveda encompasses a wide range of animal-derived products, each recognized for its unique medicinal properties. Classical Ayurvedic texts such as the *Charaka Sambhita*, *Susbruta Sambhita*, *Ashtanga Sangraha*, and *Bhavaprakasha* contain detailed descriptions of the therapeutic use of various animal products. Therapies involving animals, such as *Hirudotherapy* (leech therapy) and *Krimi Utpatti Chikitsa* (worm therapy), are also well-documented. Ayurvedic literature includes references to the use of animal substances like eight types of urine, eight types of milk, fecal matter, different kinds of meat, and various milk products in treatment protocols ^[32]. The ancient animal products and their uses are mentioned in table-3.

Table-1: Four Classes of Jeeva of Animal kingdom (Jaangam) as per Ayurveda

S.N	Types of Jeeva	Example	Remarks
1.	<i>Jarayuja</i>	Human beings, animals	Born out of physical bodies
2.	<i>Andaja</i>	Birds, Snakes	Born out of eggs
3.	<i>Svedaja</i>	Lower animals, Krimi, Keet Flies etc	Born out of sweats
4.	<i>Udbhija</i>	Frog, Beerbahuti	Sprouted from earth

Table-2: Famous ancient literature of animal science

S.N.	Literature name	Writer	Description
1.	<i>Ashwa chikitsa sambhita</i>	<i>Shalihotra</i>	Description of horse science
2.	<i>Ashwa vaidek granth</i>	<i>Jayadatta</i>	Description of horse science
3.	<i>Ashwa shaastra</i>	<i>Nakul</i>	Nakul was brother of <i>Paandav</i> of <i>Mahabharat</i>
4.	<i>Haya leelavati</i>	Mentioned by <i>Mallinath</i>	Description of horse science
5.	<i>Gaja Ayurved, Hastya Ayurveda, Gaja shaastram</i>	<i>Paalkaapya</i>	Description of elephant science
6.	<i>Gaja lakshana</i>	<i>Vrihaspati</i>	Description of elephant science
7.	<i>Maatanga Leela</i>	<i>Neelkantha</i>	Description of elephant science

8.	<i>Gav Ayurveda</i>	<i>Sahadeva</i>	Sahadeva, brother of Paandav of Mahabharat was an expert in cow science
9.	<i>Mruga-pakshi shastra</i>	<i>Hansdev (Jain Pandit)</i>	
10.	<i>Maansollasa</i>	<i>Someshwara</i>	The text has a description of the expert of elephants, horses, cows Birds (Khaga), etc
11.	The <i>Paschimottara Pradesh</i> (west-northern region) was the centre of <i>Ashwa-Ayurveda</i>		
12.	The <i>Anga-desha</i> was the center of <i>Gaja-Ayurveda</i>		

Table-3: Type of ancient animal products and their uses

S.N	Type of animal products	Description	Use	Reference/Remark
1.	<i>Dhatu</i>	<i>Rakta</i> (blood), <i>mamsha</i> , <i>meda</i> (fat), <i>asthi</i> (bone), <i>majja</i> (red bone marrow), <i>sukra</i> (semen).	Used as food and drugs	<i>Jarayuja</i> animals
2.	<i>Updhaatu</i>	<i>Stanya</i> (Milk)	Used as food and drugs in various illnesses	
3.	<i>Mala</i>	<i>Mutra</i> (urine) <i>Purisha</i> (feces)	Used as drugs in various diseases.	
4.	<i>Anga-Pratyanga</i>	<i>Mushka</i> (testicle), <i>kasturi</i> (musk), <i>yakrut</i> (liver), <i>Shringa</i> etc	Used as drugs	
5.	<i>Dhaatu</i>	<i>Rakta</i> , <i>mamsha</i> , <i>meda</i> , <i>asthi</i> , <i>asthi majja</i>	Used as drugs	<i>Andaja</i> Animals
6.	<i>Mala</i> (feces)	Therapeutic indication feces of cock, pigeon, crow owl etc mentioned in Charak samhita	In various diseases	
7.	<i>Piccha</i> (feather)	Feather ash of Peacock, cock, crow used therapeutically mentioned in <i>Ayurveda</i> .	Used as <i>dboomvarti</i> , <i>dhoopan</i> . In hiccough, scorpion poison.	
8.	<i>Anda</i> (eggs)	<i>Kukkutanda</i> , <i>Kukkutanda kapalani</i> , <i>Chatak anda</i> , <i>Aam garbha</i> (<i>garbbastwaam garbhena</i>) mentioned in charak, Sushruta samhita etc	Use in diet and drugs	
9.	<i>Kacchapa</i> (<i>kurma</i>)	Tortoise meat, Tortoiseshell (<i>Kacchap pristha ash</i>) use in <i>Ayurveda</i> as a drug.	In mental disorders, weakness	
10.	<i>Karkatak</i> (<i>kekda</i>)	<i>Seilla serrata</i> , mentioned in <i>Charak Sambhita</i> , <i>Susbruta Sambhita</i> , <i>Dhanvantari nighantu</i>	Strength promoting (<i>Balya</i>), aphrodisiac	
11.	<i>Kukkenta</i> (Cock)	The meat of cock provides strength.	<i>Balya</i> (Charak)	
12.	<i>Paaravat</i> (pigeon)	Pigeon, Dove is practiced for the treatment of diseases mentioned in <i>Charak & Susbruta Sambhita</i> .	Bleeding piles, abortion etc	
13.	<i>Sarpa</i> (snake)	Details and therapeutic use	Used in abdominal	

		available in <i>Sushruta Samhita and Charak Samhita</i>	disease, vitiligo, etc.	
14.	<i>Mayur</i> (peacock)	Peacock described in Charak and Sushruta Samhita in medical prospective	The ashes of feather used for fumigation.	
15.	<i>Matsya</i> (fish)	These are fishes described in Charak and Sushruta Samhita	Used as a food and drug.	
16.	<i>Mukta</i> (pearl), <i>Shukti</i> (oysters)	Described in <i>Ayurveda</i> literature	Bone fracture, aphrodisiac, provide body strength.	<i>Swedaja</i> animals
17.	<i>Pravaal</i>	Corallum rubrum, Coral	Hemostatic, weakness, hyperacidity.	
18.	<i>Shankha</i>	This is Sacred chank, described in <i>Bhava prakash</i>	Source of calcium, iron, phosphorus.	
19.	<i>Kapardika</i>	This is <i>Cyproea moneta</i> Linn.	Used in the treatment of indigestion, wound, wound ear pain.	
20.	<i>Shambuk</i>	This is shell of snail (Molluscs)	Used in abdominal pain, indigestion	
21.	<i>Samudraphen</i>	This is Cuttle Fish described in <i>Sushruta Samhita, Bhavaprakash</i>	Use as hemostatic.	
22.	<i>Jalauka</i> (Leech)	The Leeches (<i>Hirudinaria granulosa</i>) are a popular animal of phylum Annelida and are used in Leech therapy. Detailed description available in Sushruta Samhita	Leech therapy & feces of Leeches use as Nasya with cow urine.	
23.	<i>Indragop</i> (<i>Beer babuti</i>)	This animal is <i>Mutella occidentalis</i>	Used in vataja diseases, aphrodisiac.	<i>Udbbija</i> animals
24.	<i>Bhunaag</i> (Earthworm)	Earthworm an annelids	Rich source of cuppor	
25.	<i>Mandook</i> (Frog)	Frog an amphibian animal	Use in discharging ear	

Scope of animal research in *Ayurveda*

The purpose of animal experimentation is to know more about the health issues of the animal. Also to develop new drugs, monitor safety level of new medical treatments, drug testing, toxicity study, surgical procedures, etc. These fall in the preclinical research study. The scientific use of animals for lab experimentation research advances the appreciation of biology and health.

Although the use of animals in research is important to improve the knowledge of safety, toxicity, treatment for science but these practices must be ethically and morally justifiable.

Although the gap survives regarding laboratory research work on animals in *Ayurveda* due to lack of animal house facilities, less awareness, less interest. But now, like modern science, *Ayurveda* is also

not untouched and doing pre-clinical research study through laboratory animal experimentation for drugs, new ideas, etc. The higher institute of *Ayurveda* either has their animal house facility or their affiliation with a close prevailing animal house facility. Much preclinical research work has been completed by stalwarts of *Ayurveda* and some prospective work going on. But the overall work has less percentage of contribution.

Ayurveda has a big scope of research on animal experimentation in the subject of Dravyaguna (herbal pharmacology), Rasa Shastra (mineral pharmacology), new drug design, toxicity study, new treatment modality, and surgery. The multidisciplinary biomedical research in *Ayurveda* science is the need of time. This will be performed in a well-equipped preclinical research facility having the norm for laboratory animal experimentation. The full compliance of norm of PCA (prevention of cruelty on animals) Act 1960. Committee for the purpose of control and supervision of experiments on animals (CPCSEA), institutional animal ethics committee (IAEC) is mandatory^{[33][34]}.

CONCLUSION:

The ancient *Ayurveda* literature has rich descriptions about animal science including animal experts, types of various animals, animal ethics, animal health care, therapeutic application, use of animal products, etc. The animal science (*Pashu Ayurveda*) is widely held in the ancient era and is an extension branch of it. The relationship of human towards animal are kind-hearted. The humane care and treatment of diseases for animals are mentioned. As time passes the veterinary care branch declined due to more focus on human care. Various types of animals and their body parts or products are mentioned in therapeutic procedures. The

research on animal experimentation and pre-clinical research works still prerequisites lift for significant contribution in science and evidence-based science. More work is expected in the future for this thirst area in toxicity tests, new drug development, etc. The research work in clinical pharmacology have great potential as an option on laboratory animal experimentation and in vitro studies and needs much awareness for scientific study.

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