

## A CRITICAL REVIEW ON ANIMAL PRODUCTS USED IN THE INDIAN TRADITIONAL SYSTEM OF MEDICINE

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### ABSTRACT

As per the World Health Organization (WHO) as much as 80% of the world population primarily relies on animal and plant-based medicines. India is considered to be one of the top 12 megadiverse countries of the world with a rich flora and fauna diversity. The Allopathy and Indian traditional system of medicine basically works towards the humans and animals healthcare in which drugs derived from plants, animals and minerals sources are being used abundantly. The comprehensive study of *Ayurveda*, *Siddha* and *Unani* system (ASU) reveals that since ancient time animal products are promisingly used for various ailments. In *Ayurveda* one can find a detailed description of many domestic and aquatic animal products whereas the *Unani* system of medicine has described near about 200 drugs of animal origin. They are basically used singly as entire organisms or in the form of compound formulations. Animal products like flesh, fat, bones, excreta, teeth, feathers, hair, horns and shells has been mostly quoted under medicines. This article highlights the role of animals and their products in the therapeutic preparation of Indian traditional system of medicine.

**Key words:** Animals, Animal products, *Ayurveda*, Medicine

### INTRODUCTION

India is considered to be among the top 12 mega diverse countries of the world as it is endowed with a rich floral and faunal diversity. Since time immortal, this diversity is a part and parcel of food, cloth and medicine resources for human beings.<sup>1</sup> The World Health Organization (WHO) defined that more than 80% of the world's population depends on traditional system of medicine, which is an ancient and culture-bound medical practice existed in human societies before the modern science of health.<sup>2</sup> However, the modern as well as Indian traditional system of medi-

cine all together works for healthcare measures of humans and animals. In their therapeutic preparation, one can find the ample use of plants, minerals and animal products. The animal products like hooves, skin, bones, feathers and tusks etc. of domestic as well as wild animals are used for the curative, protective and preventive medicine.<sup>3</sup> The classical text of *Ayurveda* like *Charaka Samhita*<sup>4</sup>, *Sushruta Samhita*<sup>5</sup>, *Ashtanga Hridaya*<sup>6</sup> and *Ashtanga Sangraha*<sup>7</sup> has been mentioned many animal products along with their properties and therapeutic application in diseases in

scattered manner throughout the various chapters and parts of *Samhitas*. Thus, systemic study of these animal products mentioned in traditional system is an attempt to provide precise information on their uses and application.

**MATERIAL AND METHODS:**

The classical literature of *Ayurveda*, *Siddha* and *Unani* system along with published articles related to

ethno-medicinal study of traditionally used animals was scrutinized and then data was critically analyzed. The taxonomical classification of 156 animals<sup>8</sup> is mentioned in table 1, whereas 30 most common animal products with zoological and vernacular names and their therapeutic action and medicinal uses are placed at table 2.

**Table 1:** Taxonomical classification of animals resources used in Indian traditional system of medicine

| Sr. No. | Classification      | No. of animals |
|---------|---------------------|----------------|
| 1.      | Phylum: Chordata    |                |
|         | Class: Mammalia     | 54             |
|         | Aves                | 50             |
|         | Reptilia            | 12             |
|         | Amphibia            | 2              |
|         | Osteichthyes        | 2              |
|         | Chondrichthyes      | 1              |
| 2.      | Phylum: Mollusca    |                |
|         | Class: Gastropoda   | 3              |
|         | Pelecypoda          | 2              |
|         | Cephalopoda         | 1              |
| 3.      | Phylum: Annelida    |                |
|         | Class: Hirudinea    | 1              |
|         | Oligochrta          | 1              |
| 4.      | Phylum: Porifera    |                |
|         | Class: Demospongiae | 1              |
| 5.      | Phylum: Arthropoda  |                |
|         | Class: Insecta      | 21             |
|         | Diplopoda           | 1              |
|         | Crustaceae          | 3              |
|         | Arachnida           | 2              |

**Table 2:** Use of animal parts in traditional system of Indian medicine

| Sr. No. | Zoological Name        | Vernacular Name                            | Animal product                                     | Properties, Action and Uses   |
|---------|------------------------|--|--|---|
| A.      | Phylum: Chordata       |  |  |   |
| i       | Class: Mammalia        |  |  |   |
| 1.      | <i>Bos indicus</i>     | Gou (S),<br>Gai (H),<br>Cow (E)            | Milk and its products, urine, dung, bile and horn. | Anti-epileptic, anthelmintic, antileprotic <sup>9</sup> , anti-oxidant, anti-hemorrhagic, aphrodisiac, nutritious, antimalarial, antivenom <sup>10</sup> etc. Abdominal stone's small piece used orally to cure asthma. |
| 2.      | <i>Bubalus bubalis</i> | Mahisha (S),<br>Bhains (H),<br>Buffalo (E) | Milk, flesh, urine, bile and whole organism        | Cardiac stimulant, aphrodisiac, phlegmatic, anti-inflammatory and anti pilatory <sup>11</sup> , anti-spasmodic, antileprotic, carminative and anti- insomnia. <sup>12</sup> Ghee  |

|     |                            |   |  |  |
|-----|----------------------------|---|--|--|
|     |                            |   |  | is beneficial in bleeding disorders and flesh is used in insomnia and also as a sex tonic. <sup>13</sup>   |
| 3.  | <i>Eqqus caballus</i>      | Vaji (S), Ghoda (H), Horse (E)                      | Urine, milk, flesh, dunk and blood   | Diuretic, antiseptic, anti-rheumatic, aphrodisiac and analgesic. An excreta mixed in oil ( <i>Tila Taila</i> ) is used in eczema and milk is used in worm infestation.   |
| 4.  | <i>Elephas indikas</i>     | Hasti (S), Haathi (H), Elephant (E)                 | Tooth, tusk, milk, urine, flesh, dunk, nail, bone, bile, skin and excreta.                                       | Aphrodisiac, nutritious, appetizer, anti-inflammatory, antifebrile, Anthelmintic and skin disease. <sup>14</sup> In leukoderma its urine is used for internal and external application. <sup>15</sup>  |
| 5.  | <i>Equus hemionus</i>      | Khara/Gardhabha (S), Ghorkhar/Gadha (H), Donkey (E) | Flesh, milk, urine, dunk, fat, liver, lungs, male organs, hooves and bones.                                      | Anti-asthmatic, appetizer, anthelmintic, calculus, antiepileptic and antimenic and used in general debility and bleeding disorders. <sup>16</sup>  |
| 6.  | <i>Camelus dromodarius</i> | Ushta/ Karabha (S), Unt (H), Camel (E)              | Milk, urine, flesh, fat, lungs, Bone marrow, hair.   | It is having anti-inflammatory, depilatory <sup>17</sup> , laxative, anti-toxic, expectorant <sup>18</sup> , anti-convergent, cardiac stimulant, wound healing properties. The Camel milk along with powder of <i>Sunthi (Zingiber officinale)</i> , <i>Pippali (Piper longum)</i> and <i>Maricha (Piper nigrum)</i> ; collectively called as <i>Trikatu</i> is used in ascites. <sup>19</sup> |
| 7.  | <i>Capra aegagrus</i>      | Aja/ Chhaga (S), Bakri (H), Goat (E)                | Flesh, milk, urine, excreta, hair, bile, testis, kidney, lung, horn, hooves, brain, blood, liver, bone and teeth | Nutritious <sup>20</sup> , appetizer, anti-inflammatory, carminative, anti-coagulant, mild laxative, anti-emetic, antileprotic, anti-febrile, aphrodisiac, blood disorders, antidiarrheal, Tuberculosis <sup>21</sup> etc. Urine is used in asthma, Tuberculosis, paralysis and the milk is use for mouth ulcers. <sup>22</sup>  |
| 8.  | <i>Ovis vignei</i>         | Avi/Mesha (S), Bhed (H), Sheep (E)                  | Milk, flesh, Urine, fat, blood, liver, heart, brain, kidney, bile, excreta, bone                                 | Anti-inflammatory, analgesic, urinary infections, URTI, brain tonic, intestinal ulcers, gonorrhoea. Curd is beneficial in piles and ash of bone used in diarrhea and hemorrhages. <sup>23</sup>  |
| 9.  | <i>Antilope cervicapra</i> | Mriga (S), Hirana (H), Black Buck (E)               | Flesh, fat, testicles, milk, excreta and horn  | Anti-leprotic, aphrodisiac, nervine tonic, appetizer, and constipative. Horn ash is nutritive and demulcent used in upper respiratory tract infection (URTI). <sup>24</sup>  |
| 10. | <i>Moschus moschiferus</i> | Kasturi Mruga (S), Kasturi (H), Musk Deer (E)       | Musk pod of matured male musk deer   | Antispasmodic, cardio protective, expectorant, diaphoretic, diuretic, laxative, aphrodisiac. Moreover, <i>Kasturi</i> is used as one of the important ingredient in Ayurveda formulations like <i>Nagavallbha Rasa</i> , <i>Brihata Kasturi Bhairava Rasa</i> , <i>Vatakulantaka Rasa</i> , <i>Kasturyadi Gutika</i> <sup>25</sup> etc.  |
| 11. | <i>Mus rattus</i>          | Mushaka (S), Chunha (H), Rat (E)                    | Flesh, fat, urisa (excreta), liver   | Cardiac stimulant, lithotriptic, anti-epileptic, used in alopecia and medicated tail prepared from whole organism called as <i>Mushakadi Tailam</i> used in rectal and uterine prolapse. <sup>26</sup>   |
| 12. | <i>Fel bovie</i>           | Vrishabha (S), Bail (H), Ox (E)                     | Ox gall, penis, testicles, excreta, fat, bile  | Aphrodisiac, laxative, stomachic, antiseptic, anti-epileptic, antipyretic. In Unani system soup of testicles and penis recommended for enhancement of vigor. <sup>27</sup>   |
| 13. | <i>Cervus dama</i>         | Mriga Shringa (S),                                  | Horn   | It is having Anti-inflammatory, analgesic, anti-   |

|     |                          |   |   |  |
|-----|--------------------------|---|---|--|
|     |                          | Hiran ka Singa (H),<br>Hart's horn (E)                            |   | asthmatic, cardio protective properties. <sup>28</sup>   |
| ii  | Class: Aves              |   |   |  |
| 14. | <i>Gallus domesticus</i> | <i>Tamrachuda</i> (S),<br>Murga (H),<br>Hen/cock (E)              | Flesh, egg, eggshell, liver, brain, testis, gizzard, bile, excreta, hairs                             | Aphrodisiac <sup>29</sup> , diaphoretic, nutritious, hematinic, expectorant, anti-tussive, astringent used in wound and burns. Cock's flesh soup is used to boost up the sex stamina. <sup>30</sup>  |
| 15. | <i>Passer domesticus</i> | <i>Chataka</i> (S),<br>Chidiya/ Gauraya (H),<br>House sparrow (E) | Whole organism, blood, brain, spinal cord, flesh, excreta, egg, bone, teeth, hair, feather, testicles | Aphrodisiac and nutritious <sup>31</sup> , anti-inflammatory, anti-diarrheic. Fecal matter is applied in the anus of baby to treat constipation. Ash of excreta is used for treatment of asthma in children.   |
| 16. | <i>Pavo cristatus</i>    | <i>Neelathantha/ Shikhi</i> (S),<br>Mor (H),<br>Peacock (E)       | Flesh, feather, egg, fat, foot ( <i>Pada Nala</i> )   | Tonic, antipyretic, aphrodisiac, anti-diarrheic, anthelmintic used in ENT diseases, Legs are boiled with oil and oil is used in ear infection. <sup>32</sup>   |
| 17. | <i>Colubia lilia</i>     | <i>Kapota</i> (S),<br>Kabutar (H),<br>Pigeon (E)                  | Flesh, excreta, egg, gizzard, bile, bones   | Cardio tonic, aphrodisiac, laxative, anti-diuretic, detoxicant and used in URTI, epistaxis and blood disorders. <sup>33</sup> The fresh blood is massaged externally to treat paralysis.   |
| iii | Class: Reptilia          |   |   |  |
| 18. | <i>Naia tripudians</i>   | <i>Naga</i> (S),<br>Saamp (H),<br>Snake (E)                       | Poison, scale, flesh fat bile egg whole organism  | Hepatic stimulant and antiepileptic; snake venom is an ingredient in <i>Suchika Bharana Rasa</i> which is used for fever with cerebral complications and tendency to cardiac failure. It is also used in diagnosis of cancer (formachidis test). <sup>34</sup>   |
| 19. | <i>Testudo elegans</i>   | <i>Kacchpa</i> (S),<br>Kacchua (H),<br>Tortoise (E)               | Shell/flesh   | It is used in general debility, loss of memory URTI, Tuberculosis, insanity, epilepsy and eye disease. <sup>35</sup> Ash prepared from its shell used to strengthen the bones and used in children's epilepsy. <sup>36</sup>   |
| B   | PHYLUM: MOLLUSCA         |   |   |  |
| I.  | Class: Gastropoda        |   |   |  |
| 20. | <i>Xanachus pyrum</i>    | <i>Shankha</i> (S),<br>Shankha (H),<br>Conch (E)                  | Conch shell   | It is used in the treatment of indigestion, hyper acidity, diarrhea, splenomegaly, URTI, Ear –Nose-Throat (ENT) diseases, gonorrhoea, and Jaundice. Tablet made up of <i>Shankha Bhasma</i> (Ash) called as <i>Shankha Vati</i> is used in decreased appetite, dyspepsia and other Gastro intestinal disorders. <sup>37</sup>  |
| 21. | <i>Cypraea moneta</i>    | <i>Vatatikaa/ Varataka</i> (S),<br>Kauri (H),<br>Cowrie (E)       | Shell   | It is also used in the indigestion, hyper acidity, diarrhea, splenomegaly, URTI, ENT diseases, leukoderma and Jaundice. Ash shell of <i>Vatatikaa</i> is used in many preparations like <i>Agnikumar Rasa</i> <sup>38</sup> (used for cholera and dysentery), <i>Pradarantak Loha</i> <sup>39</sup> (used for leucorrhoea), <i>Loknathrasa</i> (used in hepatosplenomegaly) <sup>40</sup> etc. |
| II. | Class: Pelecypoda        |   |   |  |
| 22. | <i>Ostrea edulis</i>     | <i>Shukti/</i>  | Whole part  | It is well known and mostly used in abdominal tu-  |

|      |                                |   |  |  |
|------|--------------------------------|---|--|--|
|      |                                | <i>Muktagriha</i> (S),<br>Sipi (H),<br>Oyster (E)                     |  | mors, dyspepsia, colic pain, hepatosplenomegaly, URTI, burns, pyorrhea, leucorrhoea, spermatorrhea etc.  |
| 23.  | <i>Pinctada margaritifera</i>  | <i>Mauktikam</i> (S),<br>Moti (H),<br>Pearl (E)                       | Pearl/ shell   | Same as per above, it is used as a carminative, aphrodisiac, cardio tonic, nutritious, as an antidote etc in Ayurveda.   |
| III. | Class: Cephalopoda             |   |  |  |
| 24.  | <i>Sepia officinalis</i>       | <i>Samudraphen</i> (S),<br>Dariya Ka Kaf (H),<br>Cuttle fish bone (E) | Fish bone<br>sepiasuccus inscrip-<br>tion from ink sac | Astringent, carminative, local sedative, good source of calcium It is used for qualitative and quantitative enhancement of semen. <sup>41</sup>  |
| IV.  | Class: Anthozoa                |   |  |  |
| 25.  | <i>Corallium rubrum</i>        | <i>Praval</i> (S),<br>Munga (H),<br>Coral (E)                         | The calcareous shell (skeleton)                        | Antacid, astringent, nervine tonic, laxative and diuretic. Coral ash is used in abdominal tumors, tuberculosis ( <i>Rajyakshma</i> ), and hyperacidity ( <i>Amlapitta</i> ) etc. <sup>42</sup>   |
| C.   | PHYLUM: ANNELIDA               |   |  |  |
| a)   | Class: Oligocheta              |   |  |  |
| 26.  | <i>Pheretima posthuma</i>      | <i>Bhunaga</i> (S),<br>Kachua (H),<br>Earth worm (E)                  | Whole organism   | Diuretic, analgesic, aphrodisiac, lithotriptic, anti-inflammatory, anti-venom, general tonic. <i>Bhunagadi Lepa</i> is an Ayurvedic preparation used for fistula in ano. <sup>43</sup>   |
| D.   | PHYLUM: ARTHROPODA,            |   |  |  |
| i    | Class: Insecta                 |   |  |  |
| 27.  | <i>Apis mellifica</i>          | <i>Madhumakshika</i> (S),<br>Madhumakkhi (H),<br>Honey bee (E)        | Wax, honey, whole organism                             | Astringent, demulcent, laxative, anti-pyretic, hematemesis, leukoderma, gonorrhoea, carminative, ENT diseases Honey is used as medicine as well as vehicle in the treatment of many diseases like URTI, wound, obesity, <i>Prameha</i> (diabetes) etc. |
| 28.  | <i>Chlamydolycus tribtatus</i> | <i>Khadyota/ Jyotiringa</i> (S),<br>Juganu (H),<br>Fire fly (E)       | whole organism   | Analgesic, depilatory, good for eye diseases. Firefly taken with <i>Hingu (asfaoetida)</i> in renal calculi and night blindness. <sup>44</sup>   |
| 29.  | <i>Hedrurus hirsutus</i>       | <i>Vrishchika</i> (S),<br>Bicchu (H),<br>Scorpion (E)                 | Whole organism<br>Whole organism                       | It is having Anti-poisoning, stimulant, anti-tussive, antileprotic properties. Vinegar added with dried scorpion's powder in used for external application in vitiligo and alopecia. <sup>45</sup>   |
| ii   | Class: Crustaceae              |   |  |  |
| 30.  | <i>Scylla serrate</i>          | <i>Karkataka</i> (S),<br>Kekda (H),<br>Crab (E)                       | Bone and flesh   | Carminative, laxative, hematinic, diuretic, cardiac stimulant, tonic and aphrodisiac. <i>Karkataka</i> bone ash is used in constipation, tuberculosis and neurological disorders. <sup>46</sup>  |

(S-Sanskrit name, H- Hindi name, E-English name,

### OBSERVATIONS AND RESULTS:

This study was conducted through the review focused on animal products used in ASU system. It was ob-

served that, as much as 156 animal species have been reported in classical literature and in traditional practices as therapeutic measures to treat numerous dis-

eases. Animals from the phylum Chordata were mostly utilized in traditional healthcare practices. The whole organism or its distinct body parts like urine, excreta, blood, and flesh has been commonly used in treatment.

## DISCUSSION

Since centuries, in Indian traditional system of healthcare practices plants are used abundantly but animal products are used very less. However, intake of milk and milk products and their important role in the restoration of health is having inseparable relation is our traditional heritage. And the medicinal properties of milk, milk products and other animal products like blood, urine and excreta of domestic and wild animals has been well known to our Ayurvedic scholars and they are used in many therapeutic preparations and also recommended for wholesomeness and unwholesomeness (*Pathya-Apathya*) for specific diseases. Even, many animal products are simply used as a main ingredient in the preparation of ASU drugs (few examples are quoted in table 2). On the other hand, it is known fact that, many research articles has been published on therapeutic uses of animal products in ethnic groups belonging to different regions of our country. It is mentioned that, in local traditional healthcare practices of India near around 109 animals were used for about 270 different conditions/aliments and maximum numbers of animal species were recorded for the treatment of respiratory system related problems followed by musculo-skeletal system problems like rheumatic pain. The mammals were reported as the highest number of animals used for medicinal purpose followed by invertebrates and birds. Moreover, a book published by the Central Council for Research in Ayurvedic Sciences in 2008 provides in depth info on all around 160 animal species.<sup>47,48</sup>

It is fact that, a major portion of existing non-synthetic or semi-synthetic drugs are derived from plants, animal, microbial, and mineral products. However, phyto-chemistry and phyto-pharmacology of many plant remedies has been systematically explored but, actual bio-scientific evaluations of animal origin remedies are relatively rare.<sup>49-51</sup> Moreover, the conditions

like rapid human population growth, deforestation and urbanization and others are responsible for declining of natural resources and ultimately leading to drastic reduction in animal's population. Thus, more or less therapeutically important species such as Musk deer, Dolphins, Indian Flap Shell, Turtle and Coral etc. have been enlisted under vulnerable category by Red Data Book of Indian Animals which ultimately indicates need for their conservation and sustainable utilization.<sup>52</sup> There is need for prioritization of the therapeutically important animal products so that they can be utilized judiciously.

## CONCLUSION

A systemic review of classical text of Ayurveda provides unique database of around 160 animal species in the Indian traditional system of medicine. Among them around 30 animal species and their products are most commonly used in traditional practices. But, it seems to be impossible to utilize animal product based practices due their vulnerability. However, without disturbing the eco-system and judicial exploration of animal products through clinical research to find out their therapeutic efficacy in incurable diseases followed by their utilization may lead genuine cause for betterment of human life.

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