

ANIMAL PRODUCTS USED IN CURATIVE MEDICINE

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ABSTRACT

Animal products are widely adopted for the preparation of medicines in various systems of medicine. Though Ayurvedic system utilizes plant products extensively, it still uses animal products in small quantity. Similarly Unani, Buddhist and Siddha medicine systems incorporate animal products. The various parts of animals and their secretions, exploited for the purpose of preparing various drugs in ancient days are described elaborately. Traditional tribal medicines and medicine extracted from marine sources are presented with suitable examples. It is to be noted that, modern drugs also use animal secretions and hormones vastly. Though many traditional animal products are utilised in the preparation of medicines, scientific studies like pharmacognostic, pharmacological, bio-chemical, toxicological, metabolic and clinical studies should be undertaken to reveal the efficacy of the animal products.

Keywords: Medicine, Animal Based Drugs, Traditional Medicine Systems

1. Introduction

Disease is a departure from the state of health. It can be defined as any variation in the normal structure or function of a tissue or organ of the body. Diseases are common to all organisms. Diseases have afflicted humans from the prehistoric times. Different diseases, probably, remained restricted to specific areas in the beginning; later with the increase in trade coupled with human migration, they also spread to new locations. As humankind from time immemorial was hunted down by various diseases, medicine was conceived out of necessity. Medicine in the course of its evolution has drawn much from biological and natural resources. Plants and animals were available to human beings to fight against ailments and diseases. Human knowledge about natural resources and their medicinal properties became specialized and more pruned in due course.

2. Biological sources as medicine

Nature has created innumerable plants, herbs, metals, poisonous substances, minerals, salts and other organic substances. The number of substances believed to have healing properties gradually grew as discoveries were made by various groups in different parts of the world. People told one another about the virtues of medicines which became better understood. At the same time many methods of preparing and administering these substances were invented and the knowledge was widely disseminated. Some medicines were consumed directly in their natural state, but others had to be crushed or cooked or cleaned and processed into extracts, pills or other readily assimilable form or manufactured into ointment for use in plasters, massage and the like or even made suitable for administration in inhalations, suppositories or enemas.

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3. History of Plants' sources in medicine

The use of plants as medicine is much older than the recorded period of history. For example Marsh marrow root, Hyacinth and Yarrow have been found carefully tucked around the bones of a Stone Age man in Iraq (Patil, 2008). The use of plants for treating different diseases and sufferings appeared in ancient manuscripts throughout the world. The works of Aristotle (384-322 B. C.), Theophrastus (370-287 B. C.), Pliny the Elder (A. D. 29-79), Dioscorides (A. D. 50-100) and Galen (A. D. 131-201) are illustrative and described healing properties of medicinal plants (Patil, 2008). *Ebers Papyrus* (1150 B. C) which was found with a mummy on the bank of the river Nile is a unique record of some 800 prescriptions based on about 700 drugs. Castor oil, Tannic acid, Opium, Turpentine and root drugs were all used by Egyptian physicians (Park- Davis, 1961). In ancient Mesopotamia, medicine was practiced by herb doctors, knife doctors and spell doctors (Park, 2002).

During middle ages, the Arabs developed pharmaceutical chemistry, introducing a large number of drugs herbal and chemical (Guthrie Douglas, 1947). Arabs, in translating works on medicine from other languages of their foreign neighbours, not only copied their ideas, but also their beliefs and virtues of drugs and substances mentioned in those works (Khan, 1938). Over 6000 years ago, the ancient Chinese were using plants as drugs. The oldest Chinese source seems to be Erh-Ya (B. C. 3000). The Chinese emperor Shen Nung wrote an authoritative treatise on herbs in 2735 B. C which is still used (Patil, 2008). Sumerians ideograms (B. C. 4000) refer to plant uses (Patil, 2008).

Medical historians admit that Indian medicine has played in Asia, the same role as the Greek medicine has done in West, for it has spread in Indochina, Indonesia, Tibet, Central Asia and as far as Japan, exactly as the Greek medicine did in Europe and Arab countries (Park-Davis, 1961). The sacred Rig Veda and Atharvaveda (B. C. 2000-1000) enlightened much about plant medicine (Patil, 2008). The medical systems that are truly Indian in origin and development are Ayurveda and Siddha systems. Ayurveda is practiced throughout India, but the Siddha system is practiced in Tamil speaking area of south India. These systems differ very little both in theory and practice (Gokhale, 1960). Medico-epigraphic investigations on medicinal plants have established that there are South Indian inscriptions pertaining to the period of Kanchi Pallavas detailing about the export of *Masipachai* and *Marukkolundu* from the Tamil villages to China. When the basic medicaments for the practice itself were part of exported commodity, obviously some elements of medical practice could have reached China from the Tamil country in the past. Drugs like China root, China alum, China chillies, and China clay were imported from China in line of exports of pepper, sandalwood, tutinag (zinc) and other produce from Tamil Nadu (Kumaraswamy, 1983).

4. Animal materials in traditional medicine systems

Since time immemorial traditional medicine has made liberal use of natural resources. Although predominantly vegetable drugs were used, many animal-based drugs were also adopted.

4.1. Animal materials in Egyptian and Greek medicine systems

Examples of materials employed in the earliest times and explanations of their use are provided by the medical papyri of Egyptians who made use of all kinds of substances animals, vegetable and mineral. Animal substances include meat, but more particularly fat from cattle, asses, hippopotamuses, lions, mice, bats and lizards. The scrapings from

horns or tortoise shells were other ingredients; also portions of skin, bones and talons calcified and ground (Luigi Pareti, 1965). The *Materia Medica* of Greeks consisted of many substances of animal origin (Vohora and Khan, 1979).

4.2. Animal materials in Unani medicine

The Indian *Materia Medica* which includes drugs of Ayurveda -the Indian system of medicine and Unani-the Greco-Arabian system of medicine has about 2000 drugs. Out of these about 200 are obtained from animals (Puri, 1970). Unani system makes extensive use of animal drugs. It has a large number of animal origin drugs which are beneficial in a variety of human ailments (Anonymous, 1952; Ali and Mahdihassan, 1961; Wahid and Siddiqui, 1961; Puri, 1970; Rao and Ali, 1970; Said, 1970; Vohora and Khan, 1988). Entire organisms or their flesh, fat, organs, wool, milk, secretions, excretions, bones, teeth, feathers, hair, horns, shells and even pathological products formed in the body of animals are reported to be used in the preparation of medicine. These are used singly or in compound formulations and prepared in a variety of forms like powder, ash, soups, syrup, pessaries, ointments, liniments etc. (Sharma, 1996).

Wasp, cochineal insect, leech, earth worm, turtle, silk worm and cockroach are some of the animals used as whole organisms; eggs of several animals and birds are prescribed for varied purposes. Bile of animals belonging to Pisces, Reptilia, Aves and Mammalia are used in eye diseases, toxic conditions and fevers. Urine of goat, sheep, ass, cow, horse, elephant and camel are used for curing leprosy, dropsy, gonorrhoea and renal diseases. Excreta of several animals and birds are used externally for treatment of skin diseases. Musk of musk deer is used as appetizer, cardiogenic, antiemetic, expectorant and anti-inflammatory. Snake venom in small doses is recommended for treatment of chronic pains, sciatica, leprosy and leucoderma. Bones and teeth of mammals and birds form the ingredients of several Unani formulations. Horns of many domestic and wild animals are used for diarrhoea, jaundice and bleeding piles. Pathological products, e.g. ambergris of sperm whale, are prescribed for anorexia, cough, asthma, epilepsy, paralysis, dropsy and rheumatism. Otolith from the head of certain fishes is regarded as a reputed medicine for renal and cystic calculi. Pulverized stones found in the gall bladder of cows and oxen are prescribed for treatment of epilepsy, jaundice, infantile pneumonia and jaundice (Sharma, 1996).

4.3. Animal materials in Ayurvedic medicine

The pharmacopial recipes of the Indus people including some of queer formula such as bile of cat, heart of peacock (Sampath, 1983). Since majority of physicians practicing Ayurveda and patients having faith in it are vegetarians, the crude drugs from animals are put to limited usage in Ayurvedic medicine; only those which do not have any physical signs of life were used (Vohora and Khan, 1979). Animal materials such as skin, blood, meat, fat, bone, bone marrow, milk, bile, honey, hair, nail, horn, tooth and feathers come under *Jangama dravya* of Ayurvedic medicine (Bhagwan Dash and Lalitesh Kashyap, 1980).

In Ayurvedic literature, animals and their products have been classified in a systematic way. The aim of this classification is to describe the quality and utility of their flesh, blood, bones, marrow, fat, egg, bile, hooves, hair and skin as well as their products like milk, curd, ghee, butter and urine. In addition of these products, honey is an important article (Pandey, 1996). Products like milk, curd, butter, ghee, urine and dung of eight prominent domestic animals including cow, buffalo, elephant, camel, ass, goat,

sheep and more are useful in Ayurvedic medicament either singly or in combination (Pandey,1996).

4.4. Animal materials in Buddhist medicine

Urine, feces, bile, nails, hair and skin of cat, ram, owl and fox are used in psychiatric treatment of Tibetan Buddhist medicine (Terry Clifford, 1984).

4. 5. Animal materials in Siddha medicine

The Siddhas have selected such of those things which can render relief to innumerable ailments from which mankind suffered and is suffering. Several animal products are being utilized for medicinal purposes in Siddha System. Some of them are being utilized in the list of *Uparasam* and some of them are explained in the heading *Sangamapporulgal* (animal products). The shells of tortoise, the horns of antelope and the ivory of elephant are some of the examples of animal products used in Siddha system (Natarajan, 1983).

4. 6. Animal drugs used by the tribal people

Some 20 species of mammals have been proved as vital sources of tribal medicine in various states of India. About 21 diseases such as tuberculosis, rheumatic and joint pain, asthma, piles, night-blindness, paralysis, weakness, leprosy and impotency are known to be cured with the help of animal drugs. The maximum medicinal importance has been given to egg and honey. Likewise, fat derived from different animals has been proved to be one of the most effective and useful medicines for rheumatic and muscle pain, impotency, paralysis, body ache, skin burn and rickets. The fat of wild boar, pig and tiger has got maximum importance. Likewise, animal flesh is potentially useful to the tribes to serve as both food and medicine. The boiled, unboiled, or roasted flesh of different animals is generally taken for a certain period to cure deadly diseases such as tuberculosis and asthma. The use of bile of bear for high fever seems to be a very common practice among the tribal people. Human urine is used as an antiseptic (Ghosh and Maiti 1996).

The meat of mongoose is used as a remedy for rheumatic and other body pain. Monitor lizard is eaten for the treatment of skin diseases. Cooked flesh of crow-pheasant and some fishes are fed to asthma patients. The oil of Gangetic Dolphin is used for rheumatic pain, muscle pain, sprain etc. It is also used in the treatment of scabies. The firefly kept in a ripe banana is fed to women for easy removal of placenta after child birth (Dutta *et al.*, 1996). The Adi tribes of Siang district, Arunachal Pradesh collect animal for medicines, ornaments, decoration and supplementary food (Borong Asham, 1996).

5. Marine organisms and their products in medicine

The vast ocean that covers 71 % of our earth is a significant source of some precious medicines of animal and plant origin. Shell of oyster, pearl and coral are products of animal origin. The medicinal properties attributed to sponges are styptic, astringent, anti-inflammatory, anti-diarrhoeic and antidyenteric. Ash of coral is used for strengthening gums and teeth as '*surma*' for eye diseases and as an aqueous lotion in leprosy. It is useful for epilepsy, insanity, palpitation, spleen enlargement, gastric disorders, renal calculi and piles. Pearls are used for diarrhoea, hepatic and renal disorders, internal haemorrhages, leucorrhoea, piles and leprosy. Sea foam, the cuttle fish bone is pulverized and used as '*surma*' and tooth powder. It is applied externally on inflammations, bites and scabies (Sharma, 1996; Pandey, 1996).

In USA, there is a major project in which pharmacognocists are examining marine animals, particularly, sponges, molluscs and corals. Most of the constituents of odd sea animals are referred to as biotoxins, for example, tetrodotoxin from the puffer fish in small doses is useful in treating terminal cancer (Handa and Kapoor, 2001).

6. Animals and animal products in modern medicine

Certain animal parts and animal products are used as drugs in therapeutics. The major groups of animal products used in medicine are hormones, enzymes, animal extractives, organs and bile acids. Thyroid tablet is a modified preparation of the thyroid glands of sheep and pigs. It is given orally to treat patients suffering from thyroid insufficiency. It contains the hormone thyroxine. Insulin of cattle or pigs is used in the therapy of diabetes. Vasopressin obtained from posterior lobe of pituitary of healthy pigs is used in the treatment of intestinal paralysis. Pancreatin, a preparation containing pancreatic enzymes is prepared commercially from pig pancreas and is used in treating pancreatitis. Trypsin prepared from extract of ox pancreas is used for treatment of wounds, ulcers, abscesses and fistulas (Handa and Kapoor, 2001)

Liver and stomach derived from healthy and domesticated animals are converted into suitable preparations and used as replacement therapy in pernicious anaemia. Bile acids are used as sodium salts to increase diuresis. Besides the above mentioned products carmine, a colouring principle obtained from cochineal insects, cod liver oil, cantharidin of Cantharides insects and heparin are used in medicine (Handa and Kapoor, 2001). A cardiac stimulant 'eptatretin' has been discovered in the Hagfish and a powerful smooth muscle stimulant has been discovered in the Cockroach gut (Thorp and Cobbin, 1967)

7. Need for the scientific study of animal products in medicine

Animals and animal products had been part of various traditional medicine systems. In fact they continue to be an important source of medical relief for people, especially the rural population, even today. A lot efforts have been made into identification of drugs of plant origin and commercial exploitation of medicinal plants. Scientific studies like pharmacological, biochemical, toxicological, metabolic and clinical studies on most of the animal based drugs will reward the society with more medical sources.

8. Summary

Medical properties of animal materials were discovered by the genius of indigenous knowledge systems. Scientific effort to prove the efficacy of traditional drugs prepared from animal materials is the need of the hour.

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