

A REVIEW ON MARINE ORIGINATED DRUG TRADITION IN AYURVEDA

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Abstract

Ayurveda is a treasure of remedies in which various medicinal preparations are widely prepared by using marine originated drugs. These were used by Ayurvedic physician in their day to day practice in bone structure disorders, muscular movements, and regulation of gastro-intestinal secretions. Majority of such formulation are used for oral administration purpose with negligible ill effect noticed and considerably safe. Sea is one of the richest natural sources of minerals like Calcium (Ca), Phosphorus (P), Iron (Fe) and also some others trace elements in the form of Pravala (Coral), Mukta (Pearl), Shankha (Conch). Marine organisms which contribute the bioactive products are having profound applications in pharmaceuticals & cosmeceuticals. All the Marine originated drugs used in Ayurveda are to be kept under one specific group as per occurrence (Utpattisthana) with special reference to their uses and other details of calibration and validation measure such as chemical constituents, Structures, and Analytical techniques are also been discussed. This attempt has been made to accumulate all scattered literature in one place for easy and better understanding of all marine drugs of Ayurveda.

Keywords: Ayurveda; Marine originated drugs; Minerals; Applications.

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INTRODUCTION

Pharmaceutical market is growing rapidly and continuously. But, still the demand for new drug discovery is encouraged. The reason behind this motivation can be the growing numbers of drug-resistant infectious disease and more and more upcoming disorders. The terrestrial resources have been greatly explored and thus academic and industry researchers are striving to get lead molecules from the inner space of oceans. The marine resources are now a day widely studied because of numerous reasons. One of the reasons is as the oceans cover more than 70% of the world surface and among 36 known living phyla is found in marine environments with more than 300000 known species of fauna and flora. The rationale of searching for drugs from marine environment stem from the fact that marine plants and animals have adapted to all sorts of marine environments and these creatures are constantly under tremendous selection pressure including space competition, predation, surface fouling and reproduction.^[1]

Although research on marine natural products started only about 50 years ago, they have been used in traditional system of medicine much before that. In most countries with ancient civilizations, such as India, a system of medicine indigenous to the country concerned exists. In spite of all the recent advances in medicine, indigenous medicine still caters to the needs of a large section of population. Knowledge gained over trial and error over thousands of years in India has been systematized as different systems in Indian Medicine. These drugs are used singly or in simple combinations or as compounds referred as poly pharmaceuticals. The forms in which they are used are varied like extracted juices, decoctions, powders, tablets, pills, confections, syrups, fermented liquid, medicated oil (ash) and many more.^[2] Marine products are those products or substances, which are obtained from sea. They have many

properties due to which they are used therapeutically in Ayurveda since antiquity. The evolution and development of Rasashastra occurred due to the necessity for using the natural products in the field of medicine. Though some of these products were having used as a part of food yet others need to get purified and processed, so that they can be used for medicinal purposes. Rasashastra deals with the study of minerals, metals, precious stones, animal originates, marine originates and poisons etc. are found in nature in crude form. These substances were purified, processed and converted into a suitable form for therapeutic usage. Rasashastra an energetic division of Ayurveda which broadly classify various marine drugs like Sambuka, Samudraphena, Mukta, Sukti, Sankha, Pravala (Vidrum), Samudralavana, Varatika (Kapardak) into several Vargas (groups) like Shudha (Emblica/water), Ratna (Gem and Jewels), Sikta (Wetted), Lavana (Salt) varga, Sadharana rasa etc. Sea is one of the richest mineral sources like calcium (Ca), Phosphorus (P), Iron (Fe) etc. as it is seen maximum of these products are composed of CaCO_3 . As per Utpatti sthana (Occurrence) all these scattered marine drugs used in Ayurveda can be kept under one Varga for better understanding of all the drugs. It is a very high time to regroup all the scattered marine originates which is described in Ayurveda with their full details. As it is known that maximum of the marine originates constitutes mainly CaCO_3 , so, first an overlook is necessary on the natural sources of calcium (Ca). The main aims and objectives of this study is to highlight the therapeutic efficacy of marine originates in Ayurveda and explore the importance of marine originates and their safety profile.

Description of marine originates

I. Shankha

Gastropoda is the largest class of molluscs containing species and includes snails, slugs,

limpets, etc. The most characteristic feature is spirally coiled shell. These are enclosed within a shell and visceral mass. It is found very commonly in Indian Ocean coasts.^[3] As per Ayurveda Sarsamgraha sankha is a kind of sea-insect found in sea or big rivers.^[4]

Varieties

Acharya Madhava classified Shankha into two parts like Dakshinavarta and Vamavarta. Dakshinavarta variety was considered as the superior variety and it is termed as Laxmisukha Soubhagya Dayak. Vamavarta variety was considered as the medium variety and medicines are been prepared from this variety. On the basis of size this can be divided into two varieties like, big size conch and small size conch. Big size Conch approximately measures 8"-10" in length and 6"-7" in breadth and weight about 2-5 kg. Small size Conch is generally 4" in length and 2-3" in breadth.^{[5][6]}

Acceptable Characters (Grayhyalakshan)

The acceptability of Shankha is like it has to be round, smooth in touch, Sudammukha, clear like moon. It should be heavy, and big in size for the use of medicinal purpose.^[7]

Purification (Shodhana)

Small pieces of Shankha are bundled in a piece of cloth. Swedana in Dolayantra with Kanjika is given for 3 hours. When cool, the Shankha pieces are washed with warm water.

Therapeutic uses

Ajirna, Agnimandya (loss of appetite), Grahani, Amla pitta (acidity), Netraroga (eye disorder).

Chemical Constituents

Carbonate of Calcium, Iron, Magnesium, Sulphate, Phosphate and Chloride. Calcium present in 54-95% as CaCO₃.^[8]

II. Kapardika

Kapardika mainly originated in sea and its external shell of sea animal called as *Cypraea moneta* Linn. Usually after reaching the coastal areas it has been collected and dipped in boiled water. The fleshy portion is taken out and used as a diet. The cell consists of a cellular gelatinous tissue filled with calcareous matter. They contain carbonate of calcium, magnesium phosphate, manganese, sodium chloride. *Cypraea moneta* shell has been used in Siddha medicine from ancient days. The antipyretic, a tested in Wister albino rats which showed antipyretic, wound healing as well as antimicrobial properties.^{[9][10]}

Acceptable Characters (Grayhyalakshan)

The description, guna (properties) and purification (shodhana) of Varatika have been mentioned in classical text of Ayurveda Rasa Ratna Sammucchaya. Kapardika is naturally whitish yellow in colour and pith like formation can be seen on its upper surface. Kapardika is also called as Charachar. The weight of Kapardika is also mentioned according to which best, medium and inferior can be classified like 6 masa (6 g) is known as sresta (best), 4 masa (4 g) is known as Madhyama (medium) and 3 masa (3 g) is known as kanista (inferior).^[11]

Purification (Shodhana)

Usually in kanji, varatika are being purified. Kanji is taken in Dolayantra for swedana karma of Kaparda and kept for 1 prahara (3 hrs) after swedana Kapardika has been washed with hot water to remove the black spots. Swedana process of Kapardika is also mentioned in another way like Kulatha kwatha (Decoction of *Dolichos biflorus*) has to be put inside Dolayantra has to be kept for one prahara (3 hrs.) which leads to the purification of Kaparda. If Kapardika is kept in Citric acid and put in dolayantra for one prahara to boil then Kapardika becomes purified.^[12]

Marana (Incineration)

Purified Kapardika has to be kept in earthen pot and then covered by another one to do Saravasamputa (Sealing). After this they are been dried in sun light and heat treatment will be given. The bhasma is of white colour.

Therapeutic use

Kapardika Bhasma is used in Parinamsula (duodenal ulcer), Grahani (colitis), Kshayaroga (tuberculosis), Netraroga (eye disease).^[13]

Constituents

According to Adhotan Rasashastra, it consists of Calcium, phosphate, carbonate, manganese, chloride.^[14]

It contains Calcium percentage to a maximum of 91.35%.

III. Pravala

Pravala (Coral) is the calcareous skeleton of the minute marine organism and belongs to *Corallium rubrum*. The skeleton is in the form of minute irregular deposits, called spicules which contain mainly calcium carbonate; the skeleton of coral is believed to possess a special affinity for iron which combines with a calcium organic complex to give colour pigments.

Acceptable character (Grayhyalakshan)

Pravala which is red like ripe bimbi phala (fruit of *Coccinia indica*), long, round, smooth, thick, without holes and fissures is acceptable one. Pravala is whitish or grey coloured, rough, thin, light and contains holes and fissures should not be accepted.^[15]

Purification (Shodhana)

Pravala along with the Sarjika Kshara water kept in dolayantra for 3 hours and boiled.^[16]

Marana (Incineration)

Small pieces of purified Pravala sakhasto be taken and then the trituration of the pieces has to be done until that forms into powder. Then the powder has to be taken in another mortar-pestle for trituration with *Aloe vera* leaf juice (Kumari swarasa) and then the Saravasamputikarana and marana has to be done for three times until the white bhasma like moon is obtained.

Therapeutic Uses

Shotha (inflammation), Hridkampa (weakness of heart), Rakta-pitta (bleeding disorder), Raja Yakshma (tuberculosis).^[17]

Calcium percentage in Pravala: It contains approximately 80-90% calcium as CaCO₃.^[18]

IV. Mukta and Mukta-sukti (Pearl oyster)

The queen of the sea is a hard, rounded object produced by certain mollusks, such as oysters.^[19] The pearl is a valued gemstone and is cultivated or harvested for jewellery. Natural pearls are formed when a small foreign object, such as a parasite, grain of sand, or piece of food, lodges itself in the gonad or mantle tissue of a mollusk or oyster. When the mollusk is invaded by a foreign object that the animal cannot eject, a process known as encystation entombs the offending entity in successive, concentric layers of 'nacre' (nay'ker) called mukta is formed. In a defensive response to the irritant, the mollusk secretes nacre as a smooth, protective coating. As the nacre builds up around the irritant, it forms layers, eventually creating a pearl. Natural pearls that are both large in size (diameter), and have a very symmetrical shape are extremely rare. For pearls to form in nature it can take may years of near-perfect conditions for them to make a significant gain in size.^[20]

The principle difference between "natural pearls" and "cultured pearls" is the thickness of the nacre.

Since natural pearls take longer to develop, there is generally a thicker layer of nacre surrounding the nucleus. It can take as long as two to five years for a quality pearl to fully develop in the oyster. Many lower quality cultured pearls are created by inserting a large nucleus and hastening the process of nacre development. This results in a pearl with a very thin layer of nacre that will not have a great deal of luster, and will not be very durable over a long period. The pearl harmonizes Chandra (the moon) which directly influences emotions, mind, affluence, and public. Wearing a pearl can bring harmony and stability to these influences. Chandra influences the seasonal, monthly and daily cycles and rhythms in the physiology and our emotions. Chandra, the moon, occupies a central role in the solar system and in our physiology. Based on the synonyms of Mukta it can be said that the origin of Mukta is Sukti.^[21]

Acceptable Characters

The pearls which are rough, uneven, and blackish in colour, lustreless, dirty, opaque and half white should be rejected.^[22] The pearls which are like a star or ray, smooth, clear, round, light, big in size, pleasing, looking like clear water are superior and this should be acceptable .

Purification (Shodhana)

Swedana in dolayantra in a pottali with the juice of Jayanti patra (*Sesbania sesban*) for three hours purifies Mukta.^[23]

Marana (Incineration)

Purified Mukta should be taken in a Khalva yantra (Mortal and pastel) and have to be triturated well with rose water (gulab jala) in

presence of moon-light, until it dries up totally. Then it has to be given laghuputa for 3 times performing the Saravasamputa. The white coloured bhasma can be obtained by this.

Therapeutic uses

Rajyakshma (tuberculosis), Kasa (cough), Swas (cold), Daha (burning sensation), Jwara (fever), Prameha (diabetes), and Dristiroga (vision problems).^[24]

Calcium percentage in Mukta: It contains calcium as CaCO_3 is generally 70-80%.

Sambuka (Australian snail)

In Indian system of Medicine Sambuka is seldom used. The action of Sambuka is almost similar to Sankha and Kapardika^[25]

Purification (Shodhana)

Sambuka has to be taken in a clay pot with the Nimbuka swaras (fruit juice of *Citrus lemon*) or any other amla dravya (Citric group) and has to be boiled for one and half hour to obtain pure Sambuka.^[26]

Marana (Incineration)

Sambuka has to be triturated with Kumari swarasa and then it has to be sun dried and after that Gajaputa has to apply to complete the Marana (Incineration) of Sambuka and to obtain the bhasma.

Therapeutic use

Samgrahi (astringent), Udara sula (abdominal colic), Netraroga (eye disease), Raktaatisara (blood dysentery).^[27]

Calcium percentage in Sambuka: It contains 50-80% calcium as CaCO_3 .^[28]

VI. Samudraphena (Cuttle fish bone)

Animals and products derived from different organs of their bodies have constituted part of the inventory of medicinal substances used in various cultures since ancient times. Samudraphena is often found floating on seawater. It is 1 to 3 inches in width and 5 to 10 inches in length. The skeleton is an oblong, elliptical or oval, flat substance, of whitish colour, very hard and brittle. It can be easily scratched with the nails and is highly pulverisable. Cuttle fish (Samudraphena) are common on the Indian coasts. It comes under family Cephalopoda and class Mollusca.^[29] The description of Samudraphena is available from Samhita period. In Caraka Samhita, it has been widely used in the form of Varti that is Sukhavati Varti and Dristipradana Varti, to treat Kaca and Timira (Eye disorder).^[30]

Purification (Shodhana)

The hard external part of Samudraphena has to be scrapped and made into powder. Later triturate with Nimbuswarasa for one day and dry it.^[31] Calcium percentage in Samudraphena is 80-85% as CaCO₃.^[32]

VII. Samudra Lavana

Sea salt, salt obtained by the evaporation of seawater, is used in cooking and cosmetics. It is also called bay salt or solar salt.^[33]

Therapeutic uses

Antiseptic, anthelmintic, galagandanasaka (hypothyroidism), Pandu (anemia). Internally in small doses it increases the secretion of Gastric and Salivary glands, sharpens appetite. It is also an important dietary agent.^[34]

Chemical constituent

Sodium chloride 91.39%, sodium sulphite 0.12%, calcium sulphate, magnesium sulphate

and magnesium chloride are present in minor quantity.^[35]

CONCLUSION

There are various Marine originated drugs used in Ayurveda for medicinal purposes which are not under the same class or varga and moreover these drugs are full of Calcium and can be used in several diseases. So, the up to importance has been given on the Calcium content and also to keep those all drugs in a class. Sometimes the purification is a big issue in case of medicinal preparation from those drugs, so the purification procedure of each drug is also given a lot of value in this article. This attempt has been made to accumulate all scattered literature in one place for easy and better understanding of all marine drugs of Ayurveda and also to compare them with other calcium containing drugs from various origins.

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