INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN CHEMISTRY AND PHARMACEUTICAL SCIENCES
(p-ISSN: 2348-5213: e-ISSN: 2348-5221)
www.ijcrcps.com
(A Peer Reviewed, Referred, Indexed and Open Access Journal)
DOI: 10.22192/ijcrcps Coden: IJCROO(USA) Volume 10, Issue 9 - 2023

Review Article

DOI: http://dx.doi.org/10.22192/ijcrcps.2023.10.09.002

A Scientific review on Muthu [Pearl]- Siddha marine drug

Kanimozhi E[1*], Manju S[2], Murugesan S[3], Madhavan R[4], Meenakumari R[5]
[1]PG Scholar, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram sanatorium, Chennai 47, Tamil Nadu, India.
[2]PG Scholar, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram sanatorium, Chennai 47, Tamil Nadu, India.
[3]Associate professor, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai 47, Tamil Nadu, India.
[4]Associate professor, Head of the Department, Department of Nanju Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai 47, Tamil Nadu, India.
[5]Director, Head of the Department, Department of Gunapadam, National Institute of Siddha, Tambaram Sanatorium, Chennai 47, Tamil Nadu, India.
***Corresponding author:** Kanimozhi E,
PG Scholar, Department of Nanju Maruthuvam, National Institute of Siddha, Chennai - 47
E-mail: *ek4kani1996@gmail.com*

Abstract

One of the classic systems of medicine practised in India is the Siddha system. The term *Siddha* isderived from the term *Siddhi*, which is a synonym for celestial perfection. The individuals who reached this perfection were known as *Siddhars*. Understanding that Earth, Air, Water, Fire, and ether correspond to the five senses of the body-Smell, Touch, Taste, Sight, and hearing is the foundation of science. In the vast Siddha system medicine, Pearl is one of the Siddha marinedrug. It is a hard, glistening object produced within the soft tissue (specifically the mantle) of a living shelled mollusk or another animal, such as fossil conulariids. Pearls are the only gemstones in the world that come from a living creature. Pearl the Siddha marine drug which is widely used for eye diseases, kapha disease, nervous disorders, strengthening the body and mind in siddha system of medicine. Pearl powder is frequently used by many Siddha practitioners in daily life. The aim of this article is to review Muthu, its types, purification and medicinal uses.

Keywords: Muthu, Siddha medicine, Pearl

Introduction

Oneof the earliest medical systems that is described in numerous literary sources is the siddha system. Humans are affected by 4448 different types of diseases[1]. The word "*Siddha"* means "accomplishments", and "*Siddhars*" were pious individuals who had success in medicine. According to legend, this medical technique was developed with the help of 18 *Siddhars*. Tamil-speaking regions of India and overseas are the primary locations for Siddha Practice and literature. The Siddha system focuses mostly on healing. This study details the literature review of Pearl (Muthu).The word pearl is derived from the Latin word 'pirula' which means pear, that is in accordance with the pear shape of the pearls. The beauty of pearl is an object of adoration and a barometer of wealth. Pearl is counted among the nine gems[2].

A Pearl is a hard, shiny object that forms inside the soft tissue, namely the mantle of an animal, such as a living consulariid or mollusc with a shell. Muthu is widely used in Siddha system of medicine for various diseases. In our Siddha literature *GunapadamThathuJeevam*, muthu is indicated for tuberculosis, diabetes, skin diseases.

Material and Methods

Research design

Drug review on literature

Research type

Literature review

Study period

3 months

Literature collected from

The data are collected by various Siddha literatures, libraries, and journals.

Literature review

Tamil name: *Muthu*

English name: Pearl

Other names of pearl in Siddha literature:

Murivanji, Thulagam, Sukiran, Nithilam, Tharalam, Sangeendrapillai, Aathithansothi, Aazhivithu, Kathalam, Movthigam[3].

In our Siddha literature *Gunapadam Thathujeevam*, there are details regarding the birth of the Pearl. When the oysters in the sea come out and open their mouths, on the month of October and swati nakshatra, it is said that the raindrops with lightning fall on the oysters with their mouths closed and then the pearl buds are formed.

Identification[4]

Colour **:** white, pink, silver, cream, brown, green, blue, black, yellow, orange, red, gold, purple
Cleavage : None
Fracture : Uneven, various
Mohs scale-hardness : 2.5-4.5
Streak : white
Specific gravity : 2.60-2.85
Refractive index
Common pearl : 1.52-1.66
Black pearl : 1.53-1.69
Birefringence : 0.156
Pleochroism : absent
Dispersion : none
Ultraviolet : white pearls - light blue to light yellow, Fluorescence yellow and golden pearls - yellow green, greenish brown to dark
Black pearls - commonly pink to orange red

Chemical composition of pearl:

According to Bolman (1941), the nacreous pearl of Pinctada has the following composition:

Water	- 3.97%
Organic matter	- 3.83%
Calcite and aragonite	- 91.5
Loss	- 0.67%

Properties of Pearl:

Classification of pearls:

Pearls are classified according to the size as given below:

Size(diameter in mm)	Type name
Below 2.6	Minute granular
2.6-4.9	Fine pearl
5.0-6.8	Small pearl
6.9-8.2	Medium pearl
Above 8.2	Large pearl

Texture and colour of pearl:

Good quality pearls are determined by their lustre and colour. The colour of the pearl is related to the metallic elements present in the oyster environment. This has been analysed through spectral analysis of different coloured pearls.

It has been observed that cream-coloured and golden coloured pearls contain good quality of copper and silver while much sodium and zinc were reported to be present in meat-coloured and pink-coloured pearls.

The colours of the shell of the mussel also have marked influence on the colour and lustre of pearls[2].

Organoleptic character[3]:

Taste: Bitter, sweet
Character: Coolant
Division: Sweet

Action:

- Aphrodisiac
- Expectorant
- Analgesic
- Antitode
- Anti-coagulant
- Antioxidant [5]
- Anti-inflammatory [6]

Purifications of Pearl

1. 35grams of Muthu is taken in a pot and 105grams of curd is added. Then the pot is kept in sunlight by adding curd daily for 3 days and it is kept dried for next 2days without curd. The process is repeated two times and finally the purified pearl is washed and stored. This purification process is based on the Siddha text book Theran Yemagavenba.

2. Pearl is soaked in lemon juice and vinegar for a day and it is washed and stored.

3. Peral is soaked in datura metal juice for one day and it is washed with clean water. It is repeated with tamarind leave juice. And then dried in sunlight and stored[3].

Types of pearls[2]:

1. Natural pearls
2. Cultured pearls
3. Artificial pearls

1.Natural pearls:

Natural pearls may be formed within the oyster or mussels by either accidental entrance of a solid or accidental wound within the shell muscles or tissues. Pearls so produced are called natural pearls and are very rare because of their accidental origin[7].

2. Cultured pearls:

Cultured pearls are produced by human interference, when the pearls are produced through the process of culture of pearl producing oyster or mussels.

3. Artificial pearls:

Such pearls are cheap irritations made of plastics, glass, fish scales, etc. with an artificial luster[7].

A. Marine pearls[2]:

a) Pearl oysters:

Pinctada fucta, Pinctada margaritifera and *Pinctada maxima* are the three prime species of pearl oysters and produce superior quality pearls.

1.*pinctada* fucata (Gould):

It is commonly known as the Indian pearl oyster. In India it occurs in the gulf of Kutch (coast of Gujarat) and in the gulf of Mannar (off the coast of Tamil Nadu).

Pinctada fucata occurs in the intertidal area to a depth of 12 fathoms. It grows up to a size of 9 cm. Its maximum lifespan is about 7 years.

2.*pinctada margaritifera*(Linnaeus)

3.*pinctada maxima* (Jameson)

4.*Minor Pinctada* species

b) Winged oysters:

Winged oyster (*Pteria penguin*) rarely produces pearls.

c) Windowpane oysters:

Placenta placenta commonly known as windowpane oyster, produces seed pearls of minute size. They are not considered as gems but are used for medicinal purposes.

d) Sea mussel:

Sea mussels such as *Mytilus edulis.*Pern *a viridis* and *P.indica* occasionally produce seed pearls which are not considered as gem.

e) Giant clam:

Tridacna, the giant clam, produces occasionally large sized pearls, as big as a golf ball.

f) Gastropods:

the gastropod, Haliotis species, produces multi-coloured irregular pearls, especially red and green in colour.

Calcium absorption and formation of calcium carbonate:

The main ingredient of pearl is calcium carbonate (calcite and aragonite). In pearl oyster the main source of calcium from water.

Calcium absorbed through food and from water slowly move into the pallium through blood. The carrying of calcium in the body deponds mainly upon the role played by alkaline phosphatase present in the epithelial cells of the connective tissue and mantle of the pearl sac. Alkaline phosphatase combines with the calcium ion (Ca+2) to form phosphate and other salts.

The calcium ion in the presence of phosphatase gains energy and passes through the mantle to be absorbed by its epidermal cells. This is then carried to the connective tissue of the pearl sac.

In the course of its passage the Ca+2 also unites with the cartilaginous sulphate. It further induces the calcium ion to become active and is transported to the cytoplasm of nacreous layer and ultimately excreted by the epidermal cells.

The excreted calcium then under the activity of carbonic acid releasing hydrase combines with the carbon dioxide and ultimately forms calcium carbonate[2].

Uses of pearls:

In India pearl powder and pearl liquid are important ingredients as follows:

1. Pearl powder is a highly stimulant tonic and aphrodisiac. Its other medicinal values are -Laxative, Sedative, Emetic and Nutritive.
2. Peal powders act as an antacid. It is also used in heart burn and bilious affections.
3. The pearl calcium tablet is marketed in Japan for pregnancies, weak bodies, tooth cavities, stomach acids and allergies[2].
4. It is used to control high blood pressure.

Medicine	Indications
Muthu parpam	Skin diseases, diabetes mellitus, fistula, cough, menorrhagia
Muthu chenduram	Tuberculosis, syphilis, loss of taste, hiccups, ascites
Muthu chunam	*Vatha* diseases, *pitha* diseases[3]

Discussion and Conclusion

Pearls are known for their unique appearance and value. It was used for a long time in old civilizations till now in Egyptian, Roman, and Persian civilizations[7]. Pearl is the only gem that is formed by a living creature. The present article reviews the way howmollusk creates pearls and how it is formed. The process of purification and its physiochemical composition was explained.Pearl types were reviewed and their indications, treatment methods were also detailed. In Siddha system of medicine this marine drug is used to cure diabetes, syphilis, tuberculosis, ascites and oedematous conditions. Future evaluation of this study with In-vivo and In-vitro screening will be more useful of the drug for clinical application.

References

1. Dr.M.Shanmugavelu., Noi Nadal Noi Muthal Nadal part 1, Indian medicine and homeopathy Department, 2014, 5.
2. https://www.notesonzoology.com/india/pearl-culture/pearl-culture-in-india-meaning-types-and-uses/951
3. Dr.Thiyagarajan.R, Gunapadam part 11&111, Indian medicine and homeopathy Department, 2013, 8th edition, 488-501.
4. https://en.m.wikipedia.org/wiki/pearl
5. Hui-fang chiu et al, Efficacy of protein rich pearl powder on antioxidant status in a randomized placebo-controlled trial, Journal of Food and Drug Analysis, Jan 2018, 26(1), 309-317

6. Loh. X.J, et al, Pearl Powder – An Emerging Material for Biomedical Applications- A Review, Materials 2021, 14, 2797.
7. Aida El-Refi et al, Pearls: a literature review, International Design Journal, Vloume 12, Issue 4,July 2022.

Access this Article in Online	
Quick Response Code	Website: www.ijcrcps.com Subject: Siddha Medicine
DOI: 10.22192/ijcrcps.2023.10.09.002	

How to cite this article:
Kanimozhi E, Manju S, Murugesan S, Madhavan R, Meenakumari R. (2023). A Scientific review on Muthu [Pearl]- Siddha marine drug. Int. J. Curr. Res. Chem. Pharm. Sci. 10(9): 5-10.
DOI: http://dx.doi.org/10.22192/ijcrcps.2023.10.09.002

