



Medical Geological Validation of Unknown *Ayanagam* of Siddha Medicinal Ore for Cancer Cure

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Abstract :

In Tamil literatures the usage of *ayanagam* ore of Siddha medicine is in the preparation of medicines for curing the cancer and blood related diseases originated from affected bone marrows of human body is well known. *Ayanagaparpam* and *ayanagasenduram* were used to treat Parkinson's disease, vomiting, migraine, eye problems, periodic fever, skin diseases, diabetes hiccough, mental disorder, meningitis and vertigo. At present the *Ayanagam* is unknown and wrongly classified under ore of iron. Based on ancient siddha literatures and medical geological aspects, the *ayanagam* is identified as Marmatite ore and pharmacological processing and standardization are yet to start for this geomedicinal ore.

Keywords: *ayanagam*, cancer cure, marmatite, medical geology, siddha indian medicine.

Introduction

The Indian medical systems siddha, ayurveda and unani-tibb are using natural products from plants, animals and minerals as drugs. Available information on mineral origins of drugs are scant. The study of role of elements in health and diseases has now become a subject of global interest. The theory of balanced state of elements representing health and imbalance state of constituent elements indicating disease forms the basis of the Indian system of medicine since ancient times. (Vohora and Mohammad Athar, 2008.)

Through medical geology we can evaluate both positive and negative health effects of elements, metals, minerals and ores on the life and environment (Swapna Mukerjee, 2011). The present study attempts to identify and validate the *Ayanagam*, less known mineral drug of Siddha Medicine based on Tamil Siddha literatures and Medical geological aspects.

The Siddha book *AgasthiyarKarisal* mentions as follows:

Erumpilapirantha Naga

Melumbilae Niraintha Roga

G.Manimaran and M.Sugan

Mirangavea Thurantha Nega

Mitchaippadi Metchchapperu.

- *AgasthiyarKarisal*,Tamil manuscript.

The above Siddhar's science says that the ore of *Ayanagam* can completely cure all diseases related to bone marrow by toning up the bone marrow by increasing immune system.

Recent stem cell research suggests that the immunization of our human body is maintained by T.Lymphocytes and B-Lymphocytes (Manimaran *et al.*, 2011) which usually originated from the ends of the long bones called as bone brains by Siddhar in "*Paripachai*"-codeworded language.

The great siddha saint *Thirumoolar* stated the efficacy of *ayanagam* as follows:

"Karumponnilana Nagathinathisayam

Perumpuvi Meethir Pirasingipparillai

Virumbina Perkku Viyathiyuntovidal

Varumpiniyana Madavaralontrumae

- *ThirumoolarKanmakaandam1000*,Tamil ms.

The verse means that

"the importance and wonder of *ayanagam* is its components which can strengthen the bone marrow and capable of avoiding newly arising and probable ailments"

Thanvanthiri says that

Ayyathilluthithidu Nagapperumai yennaal

Aritharaithaleninu Naniyaraiyak Keanmo

Payathilluthithedu Kanala Noiye Varkkap

Paaravaariththai Varappathutha Naalum

- *Thanvanthiri Vaakadam*, Tamil ms.

The above Tamil verse confirms that the *ayanagam* can treat the disease formed due to heat and *pittham* (dominance of heat with some excess water in the body- bile).

Theraiyar view is well known that the *ayanagam* is a direct medicine (Nermarunthu) for cancer and bone related all diseases and is in siddha formulation from before 500 BC.

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From Siddha Tamil literature it is also known that the *AyanagaParpam*, *AyanagaSenduram* medicines prepared from *ayanagam* were used to get ease from *Vatham* (excess air and space in body) paralytic attacks, hiccough, nausea, eye problems, meningitis, migraine, hay fever, typhoid, skin allergy diseases, diabetes, severe gangrene, edema, hydrocele and mental disorder and *pittham* (excess heat and water)(*Theriyar yamaka venba mudalpagam*, Tamil ms., Thiyagarajan, 1981, Manimaran *etal.*,2011). But still today, actual ore of *ayanagam* was unknown due to communication gap in transfer of pharmacological identity of *ayanagam* to one generation to other generations. Recently an attempt was made to pinpoint the *ayanagam* on the basis of siddha literatures.

Medical Geological Aspects of *Ayanagam*

Literally *ayanagam* means a compound of *ayam*(iron in Tamil) and *nagam*(zinc in Tamil). Hence it was wrongly interpreted as a metal derived from iron ore or as a variety of iron usually occurring as snake-like veins (*Nagam* also means snake in Tamil). That is why it was classified as an iron ore in recent pharmacological books. Since the actual *ayanagam* ore is unknown, pharmacological researchers have only attempted towards artificial *ayanagam* (*Ayanagam Vaippu Saraku, Boghar 7000*, preparation of drugs and usages are well detailed therein without using the natural *ayanagam*).

On validation of *ayanagamsiddha* literature signifies *ayanagam* as

Karumponilana Nagathinathisayam

- *Thirumoolar, Thirumoolar Kanma Kaandam*, Tamil Ms.

which means wonder of black coloured (iron bearing)

Nagam-i.e., Ayanagam

Ayathilluthithedu Nagapperumai

- *Thanvanthiri, Thanvanthri Vaakadam*, Tamil ms.

It means “The fame of *Nagam* born in iron or occur along with iron”

Eyrumpila Pirantha Nagam

- *Agasthiyar, Agasthiyar Karsisal*, Tamil ms.

It means

Nagam born with iron (or)

Nagam associated with iron ores.

From the above annotations from Tamil Siddha literature, we can conclude that the *ayanagam* is essentially made up of Ayam (Fe) and Nagam (Zn) and is an ore usually associated with iron ore either Magnetite (Fe_3O_4) or Haematite (Fe_2O_3). The following minerals with iron and Zinc are considered for *ayanagam*(Betekhtin,1980 and Dana,1985.).

1. Danalite – $3(\text{Fe, Zn, Mn}) \text{BeSiO}_4 \bullet \text{ZnS}$
2. Ilesite – $(\text{Mn, Zn, Fe}) \text{SO}_4 \bullet 4\text{H}_2\text{O}$
3. Bianchite – $(\text{Zn, Fe}^{++})(\text{SO}_4) \bullet 6(\text{H}_2\text{O})$
4. Zinc-Copper Melanterite – $(\text{Zn, Cu, Fe}) \text{SO}_4 \bullet 7\text{H}_2\text{O}$
5. Zinc-Copper Chalcantite- $(\text{Zn, Cu, Fe}) \text{SO}_4 \bullet 5\text{H}_2\text{O}$
6. Dietrichite – $(\text{Zn, Fe, Mn}) \text{SO}_4, \text{Al}_2 (\text{SO}_4)_2 \bullet 22\text{H}_2\text{O}$

Though the above ore minerals are with iron and zinc, in the field they are not associated with iron ores and their occurrences are only from foreign countries and not from India, hence no one of the above could be validated as *ayanagam*.

On considering zinc ores associated with iron ore magnetite we can narrow down to the following three ores:

1. Franklinite $(\text{Fe, Zn, Mn})\text{O}, (\text{Fe, Mn})_2\text{O}_3$
2. Sphalerite (ZnS)
3. Wurtzite (ZnS)

Of the above three, franklinite is only from Frankline of America, not of Indian origin and sphalerite and wurtzite are not having iron in them. Hence they are not considered as *ayanagam*.

Which one is *Ayanagam*?

The bronze age of India dates back to 2200 BC and smelting of zinc and copper technology was transferred from India to other nations. The first zinc smelting industry is from Jawar of Udaipur district of Rajasthan of India (Biswas,1993).

The main constituents of Boghar's *AyanagaVaippuSarakku* (Artificial *ayanagam*) includes Ayam (Iron), Nagam (Zinc) and *Kandagam* (Sulphur) as per the following Bhogar 7000 verse.

“*Ayanaga Viththai Kealu*
Sathagama Eliyalam Palirandu Seril
Kaanentri Kandagaththai Podiyapp Panni”

- *Boghar7000, Tamil ms.*

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Hence, the *ayanagam* should not only be composed of iron and zinc but also of Sulphur. The above three metals are known to control bone marrow of human beings and to maintain the homeostasis of the body (Vohora and Mohammad Athar, 2008; Thiyagarajan, 1981).

The ore with iron, zinc and sulphur constituents which always occur along with iron ore magnetite is marmatite which is discovered as the natural ore *ayanagam*, (Zn, Fe)S, a variety of sphalerite with iron constituent (Fig. 1).

In Indian context, marmatite ore occurs in association with magnetite at Jawar mines of Udaipur and Rampura of Bhilwara district of Rajasthan and Mamandur of Tamil Nadu (Fig. 1 and 2).

Marmatite is a ferriferous variety of sphalerite (crystallizes under isometric system) having iron, zinc, and sulphur in its composition (Zn, Fe)S, occurring in massive (or) crystal forms. It is feebly magnetic and usually associated with magnetite mineral (isometric). At Zawar, marmatite along with sphalerite and magnetite occurs in the shear zones of impure limestone and at Rampura it occurs in biotite gneisses. At Mamandur, marmatite bearing multimetal deposits of Cu, Zn and Pb occur at the intrusive contact zones of garnetiferous gneisses with biotite granites of Archaean age (Deb, 1980; Sankar, 2000; Umathai, 2006). Hence Tamil Siddhars might have got their marmatite (*Ayanagam*) ores either from Mamandur of Tamil Nadu or from Zawar / Rampura of Rajasthan for their use in Siddha formulations. Apart from India, it also occurs in Yugoslavia, Italy, China, USA, South America, Romania and Germany. Associated minerals are quartz, calcite magnetite, pyrite, chalcopyrite, and galena (Asoke Mukerjee, 1964; Biswas, 1993).

Chemistry of Marmatite

In ferriferous marmatite, iron content goes up to 20%. It is dark brown to black with sub-metallic lustre; it is transparent also with specific gravity ranging 3.9-4.05. The proportion of FeS and ZnS varies between 1:5 to 1:2, usually feebly magnetic (whereas sphalerite is non-magnetic) often containing an antioxidant manganese and sometimes cadmium, mercury and rarely lead and tin. Also sometimes contain traces of indium, gallium and thallium and may be argentiferous and auriferous (Ford, 2006). The ferriferous content of the marmatite is easily acceptable to the human body. While doing pharmacological attempts the merits and efficacy of the above metals should also be considered carefully.

Conclusion

Based on the siddha literature, ore petrology, pharmacological aspects, geological field association and medical geological aspects like cancer curing and pitha, and vatha ailments alleviating, so far unknown *ayanagam* of siddha medicine is now identified as marmatite ($(Zn, Fe)S$), an iron bearing sphalerite. Systematic pharmacological procedures are available in ancient siddha literature to formulate *ayanagaparpam* and *ayanagasenduram* and other medicines related to *ayanagam*. Now the marmatite (*Ayanagam*) is warranted for usage in pharmacological preparation of the geomedicines so as to eradicate cancer and blood related and other diseases, a need of the day.

Figure 1 : The figure shows massive *ayanagam* (marmatite ore) occurring in the host of limestone from Zawar mines of Rajasthan. In Google website, varieties of marmatite are available in marmatite gallery.



Figure 2 : Marmatite (*Ayanagam*) samples collected from Mamandur Zinc Copper Lead Deposits of Tamil Nadu.



- 1) **The country rock migmatitic gneiss.**
- 2) ***Ayanagam* (Marmatite).**
- 3) ***Ayanagam* (Marmatite).**
- 4) **Malachite.**
- 5) **Galena ore in gneiss.**

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Medical Geological Validation of Unknown *Ayanagam* of Siddha
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