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A REVIEW ON THE CONTROVERSY OF SHILAJATU

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ABSTRACT

Ayurveda pharmaceutics deals with a segment termed rasashastra, where drugs of varied origin viz. minerals, metals, gemstones, marine products are employed in designing of various formulations. For suitability, these drugs are categorized into different groups namely Maharasa, Uparasa, Sadharana rasa, etc. Shilajatu (Black bitumen) is one of the rasa dravya grouped under Maharasa. As in rasashastra most of the dravya are mineral origin drugs (inorganic composition), shilajatu is also considered the same. Different texts of rasashastra have explained varieties of shilajatu and it is said to be an exudate from shila (rocks) that appears like jatu (lac like substance). Based on the region and mountainous area it is collected from, the appearance and the composition varies. The recent researches have put light that it is a combination of organic elements and inorganic substances. Enormous content relating to shilajatu is available in the treatises of rasashastra but it still remains a drug of ambiguity.

Keywords: Shilajatu, Black bitumen, Maharasa, Ayurveda pharmaceutics

INTRODUCTION

Shilajatu is categorized under Maharasa **[1]** and is said to possess properties that can be used in the treatment of various disorders. It is opined as rasayana and is said to cure all diseases when used in a suitable manner.

Shilajatu has been found in the Tibet, Altai and Caucasus Mountains, as well as the

Gilgit Baltistan region of northern Pakistan, but it is found most commonly in the Himalaya Mountains. There are many different names for this tar-like mass which are: silajit, salajeet, shilajeet, mumijo, momia, moomiyo, shargai, black asphaltum, Asphaltum punjabinum (Latin), mineral pitch or mineral wax (English), dorobi, barahshin, brag-shun or baraga shun, chao-tong, and wu ling zhi **[2]**.

Different types of Shilajatu are mentioned, one classification is based on the origin of it viz., swarnadrija, rajatadrija, tamradrija, lohadrija **[3]**. Nagadrija and vangadrija are added later **[4]**. Another classification is based on the characteristic features namely gomutra shilajatu (possesses the odour of cow's urine) and kapura shilajatu (which has the odour of camphor). The first of these two, Gomutra shilajatu, is again sub divided into two, the one which has got some essence and the other which has got no essence. Of these two, that which has got essence or substance is better than the other variety.

Though a lot of content is available on shilajatu in authoritative books of Ayurveda in general and text of rasashastra in particular, it is an ambiguous drug at present owing to the controversy surrounding it. Various opinions are put forth by scholars pertaining to it.

Controversy of Shilajatu:

As per a Geological survey of various samples of Shilajatu from Western Himalaya that was carried out by Indian scientists Rajnath and Prasad, it was found that inflammable mineral substance bitumen or the rocks, from which Shilajatu exudes, are not related with the genesis of Shilajatu. They observed that a plant resembling Snuhi (*Euphorbia nerifolia*) grows in the vicinity of rocks which exude Shilajatu. Another study where the chemical analysis of Shilajatu and latex of *Euphorbia royalina* was carried has proved the similarity; and stated the possibility of Shilajatu to be of plant origin **[5]**.

Shilajatu is said to contain albuminoids, gums, resins, benzoic acid, fatty acids and hippuric acid. Based on these observations, it is solicited that Shilajatu is a plant originated substance. Moreover, the hippuric acid albuminoids (which are found in animal urine), indicate that it may also be of animal origin **[6]**.

A study where analysis of the rocks was carried affirmed that the rocks which exude Shilajatu and showed that both are totally unrelated chemically. The rocks contained very insignificant amount of iron

(Ayurvedic texts mention that Loha Shilajatu contains iron in ample quantity). From these observations it is clear that the interrelation between the rocks and their exudation, Shilajatu, is very feeble. Moreover, the scientists enlightened that the variation in colours of Shilajatu are due to changes in the colour of latex of *Euphorbia royalina*, due to atmosphere. First it is golden yellow, then turns into red-brownish and finally, black **[7]**.

Ayurvedic texts had mentioned that Loha (iron), Tamra (copper), Suvarna (gold) and Roupya (silver) varieties of Shilajatu are found in the vicinity of the mines of these metals and Shilajatu is formed as an exudate from these rocks. But Shilajatu is not found either in Khetri (Rajasthan) where there are copper mines or in Bihar, where there are iron mines. All these regions are well-known as hot places, still no Shilajatu is found there. Further, there are many similarities between the plant Snuhi (*Euphorbia nerifolia*) and Shilajatu **[8]**.

In a study a new hypothesis has been given and suggested that bryophytes are the basic source of the origin of Shilajatu. This hypothesis provided valuable clue towards this mystery and also strengthened the vegetative origin of Shilajatu **[9]**.

Researchers have found plant organisms in shilajatu from multiple species including Trifolium repens, Euphorbia royleana, Pellia, Minium, Barbula, Stephenrencella- Anthoceros, Fissidens, Asterella, Plagiochasma, Thuidium, Marchantia and Dumortiera **[10]**.

From these views it seems that Shilajatu may be a plant originated substance. But still controversy remains unsettled.

Shilajatu is the exudation caused by the intense heat of the sun, from rocks in the womb of which lie deposited gold and other metals. It is soft as mud and resembles shellac in appearance. Shilajatu exudes from heated rocks containing gold, silver, copper, iron, tin, and lead, that exuding from iron ores being the best in quality, Shilajatu coming out of gold, silver, copper, and iron mines are especially suitable for the pacification of an abnormal excess in the system of vayu (air) combined with pitta (animal heat), kapha (phlegm) combined with pitta (animal heat), kapha (phlegm) only, and the three doshas (vayu, pitta and kapha) combined respectively. For the purpose of preventing and curing senility, the shilajatu which comes out of iron is the best **[11]**.

Though the controversy remains unanswered, as per a research carried out it is mentioned that Shilajatu is a complex form of organic humic substances. Humic substances are formed by the microbial degradation of dead plant matter, such as lignin. Conversion of lignin and other components into humic substances like humic acids (HA), fulvic acids (FA), and humin is known by Humification Index (HI). Humification Index is used as process controlled parameter, while in shilajatu the humification process will be completed naturally (not induced). Hence HI will predict the quality of shilajatu. Knowing the ratios of HA to FA helps to predict HI, because FAs (more aliphatic and richer in carboxylic acid, phenolic and quinone groups) are more soluble and reactive than HAs (more aromatic and insoluble when carboxylate groups are protonated at low pH) **[12]**.

Studies have shown the presence of constituents like Tannins, Steroids, Triterpenoids, Flavanoids, Proteins, Saponins and Carotenoids. It also shows the presence of elements in Oxide form viz. Major elements like Rb, Zinc, Oxygen; Moderate elements Aluminium, Lead and average elements Silicon, Phosphorous, Magnesium, Sodium, Iron and Calcium **[13]**.

Yet another study showed the primary active ingredients in Shilajatu to be Fulvic acid, Humic acid, Humin, Dibenzo alpha pyrons (DBP) and trace minerals. Other molecules present in shilajit preparations are eldagic acid, some fatty acids, resins, latex, gums, albumins, triterpenes, sterols, aromatic carboxylic acids, 3,4-benzocoumarins, amino acids, polyphenols, and phenolic lipids **[14]**.

The phytochemical investigation of Shilajitu has six new compounds named a-shilajityl acetate, shilajitol, shilacatechol, shilaxanthone, shilanthranil and naphshilajatuone along with pyrocatechol and their stereo-structures have been elucidated correspondingly as 4a, 5a, 6a-trihydroxygeranyl acetate, 6-(9, 9-dimethylbutyl) phenol, 1-cyclohexyl-3, 4-dihydroxybenzene, 2, 3, 12, 13-tetrahydroxy-10, 15-[a,f]-phenylxanth- 17-one, 2, 3, 13, 14-tetrahydroxy-15, 16-[a,f]-phenyl-7H-anthracen-18-one and 3-hydroxynaphthalenyl-6,7-g-lactone on the basis of chemical data analyses and chemical reactions **[15]**.

CONCLUSION:

Shilajatu is a mineral drug explained in the treatises of Ayurveda. It is said to be an exudate derived from mountainous regions that exudes during summer. Based on a research, the rocks that were analyzed

showed that exudation of Shilajatu from the rocks are chemically unrelated. Shilajatu is said to be an exudate of a type of Snuhi (*Euphorbia royalina),* and a new hypothesis has been given and suggested that bryophytes are the basic source of the origin. Shilajatu can be taken as a complex form of organic humic substances with presence of phyto constituents, oxides of various elements. Fulvic acid and HI can be taken as yardstick to determine the quality of Shilajatu.

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