

A REVIEW OF SHILAJATU

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ABSTRACT

Shilajit is a pale-brown to blackish-brown exudation, of variable consistency, exuding from layers of rocks in many mountain ranges of the world, especially the Himalayas and Hindukush ranges of the Indian subcontinent. It has been found to consist of a complex mixture of organic humic substances and plant and microbial metabolites occurring in the rock rhizospheres of its natural habitat. Shilajit has been used as a rejuvenator and an adaptogen for thousands of years, in one form or another, as part of traditional systems of medicine in a number of countries. Shilajit is a rejuvenator ('Rasayana') of traditional Hindu Ayurvedic origin, which clearly has attracted

considerable interest in India. Shilajit is a blackish-brown exudation of variable consistency exuding from layers of rocks in many mountain ranges of the world, especially the Himalayas and Hindukush ranges of the Indian subcontinent. Shilajit has been used as a folk medicine for general physical strengthening, anti-aging, blood sugar stabilization, urinary tract rejuvenation, enhanced brain functioning potency, kidney rejuvenation, immune system strengthening, arthritis, hypertension as well as for treating many other conditions.

INTRODUCTION

Ayurveda, the science of life is a well documented traditional system of medicine, it is a discipline of the upaveda or "auxiliary knowledge" in vedic tradition. It is treated as a supplement or appendix of the Rigveda. However, some believed that Atharva-Veda is the prime origin of Ayurveda. The samhita of the Atharvaveda itself contains 114 hymns or incantations for the magical cure of diseases. Charak has advised in his samhita that physicians should adhere to Atharva-Veda. Regarding origins of Ayurveda it has been traced back to 5,000 B.C, originating as an oral tradition and later on as medical texts, Ayurveda had

evolve from the Vedas, there are various legendary accounts for the "Origin of Ayurveda", e.g., that the science was received by Dhanvantari (or Divodasa) from Brahma, tradition also holds that a lost text written by the sage Agnivesa, a student of the sage Bharadwaja, influenced the writings of Ayurveda.

Herbal dietary supplements are big business even in the countries like United States. More than 40% of adult Americans use some form of alternative medicine, including herbals, massage, chiropractic, and hypnosis, and spent \$5.1 billion out of pocket for herbal therapies in 1997. Herbal use increased by 380% and megavitamin use by 130% from 1990-1997. More than 60% of people worldwide do not disclose their use of complementary medicine to physicians.^[1] Some herbal products like Echinacea, Ginseng and St. John's wort, are now sold in supermarkets, pharmacies and discount stores. Attributed with many remedial and curative properties, Shilajit is a potent rejuvenator and anti aging compound. It is used as a panacea for many illnesses in oriental medicine, across Himalayan regions bordering India, China, Tibet and parts of central Asia where it occurs in the form of rock. Early ayurvedic writings from the Caraka Samhita and Susruta Samhita describe shilajit as a cure for all disease as well as a rasayana (rejuvenative) able to increasing longevity from 100 to 1000 years of age. It is composed of humus and organic plant material that has been compressed by layers of rock mixed with microbial metabolites. It contains more than 85 minerals in Ionic form and humic substances (mainly fulvic and humic acid). The clinical studies on shilajit, conducted have so far; have been conducted on animals only. In the light of below mentioned facts Shilajit should be extensively studied and may be made available as a general tonic. Shilajit is one such remedy, which has been in use as a folk medicine for over 3000 years as a rejuvenator and adaptogen (Sharma, 1978). It has been used by Vaidyas and Hakims for ages and has a unique place in the ancient texts. It has been said that there is hardly any curable disease that cannot be controlled or cured with the aid of shilajit. Although this is a tall order, scientific studies over the past 20–25 years have shown that it is indeed a panacea in traditional medicine, effective in a number of ailments. This is a brief review of the ancient claims for this panacea and the modern scientific findings that have validated these claims. Shilajit mainly consists of paleohumus (around 80– 85%) and organic compounds derived from vegetation fossils that have been compressed under layers of rocks for hundreds of years and have undergone a high amount of metamorphosis due to the high temperature and pressure conditions prevalent there (Ghosal et al., 1991a; Ghosal et al., 1997; Ghosal et al.,

1993b). During warm summer months, shilajit become less viscous and flows out between the layers of rocks.

Shilajit in vedic and ancient texts

Vedic Kala

Hindu culture is the most ancient culture in the world and is preserved in the treasure house of the *Vedas*. *Ayurveda* is the branch of *Atharvaveda*, which is science of healthy living. There is no inscription of *Shilajatu* at the time *Vedic* era.

Pauranika Kala

The author of *Brihat Rasaraja Sundaram* mentions about *Shilajatu*, as quoted in *Puranas*, where the *Shilajatu* is mentioned as mineral ore, substance of *Mandarachala parvata*. During the time of *Samudra-manthana* *Mandarachala* and *Vasuki Naga* were used for churning purpose by Gods and Demons. Due to friction some minerals were produced in *Mandarachala parvata*, among these *Shilajatu* was one; the exact date was not known (*Brihat Rasaraja Sundaram*).

Post Vedic Period

Shilajatu has been given prime importance by the *Acharyas*. Though the *Vedas* are silent about the topic of *Shilajatu* but the references are found in *Puranas*, Indus valley civilization and even in *Kautiliya Artha Shastra*.

Origin of *Shilajatu*

Ancient texts categorically state that *Shilajatu* is a product exuding out of rocks in the *Himalayan* area in summer months due to the heat of strong sun rays.

Charaka Samhita

Basically the origin of *Shilajatu* is described in *Charaka Chikitsa Sthana* (1/3/56) after describing the properties, *bhavana dravya*, dosage etc. It is mentioned that when the mountain rocks, which are abundant in metallic elements like- gold, silver, copper and iron are heated up then the lac like exudate, which is soft like clay oozes out.

In *Charaka Sutra Sthana* (1/71) while commenting on the *Parthiva aushadhis*, narrated by *Agnivesha*, *Chakrapani* considered the word *Mala* as *Louhamala* i.e. *Shilajatu*. Though it is not directly mentioned in this particular *shloka*.

Sushruta Samhita

In *Sushruta Samhita* (Sh.Ch.13/4) the reference of origin is found similar to that of *Charaka Samhita* but specifying the season as ***Shukra*** (*Jyeshtha*) and ***Shuchi*** (*Ashadha*).

***Ashtang Hridaya* and *Ashtang Samgrah*:**

It have given no specific origin of *Shilajatu* as compared to the *Charaka* and *Sushruta Samhita*.

Rasa-Grantha

In *Rasarnava* the origin of *Shilajatu* is mentioned in seventh *Patala* (7/19). Here *Lord Shiva* narrated about the process of origin of the drug as during summer season the mountain gets heated up and as a result these mountain releases the extract of the exudate of *Dhatu* called as *Shilajatu*.

In *Rasa Ratna Samucchaya*, *A.K.*(1/206), *A.P.*(4/96), *R.T.* (22/62-63), *R.Chu.* (10/16), *Basavarajeeyam* (15th chapter), *Rasa Paddhati* (44) etc, there is description regarding the origin of *Shilajatu*, which are almost similar to each other with minor difference.

Types of *Shilajatu*

Different types of *Shilajatu* are mentioned in various contexts as far as number is concerned, but the basic concept remains same i.e. variety depends upon the rock from where it exudes:

Charaka Samhita

Most of the authors believed that there are only four varieties of *Shilajatu* following the concept of *Charaka Samhita* (Ch.Ch.1/3/49). This classification is based not only on the colour and consistency of *Shilajatu* but also on the element present in the mountain from which *Shilajatu* emerges-

- | | |
|--------------------------|----------------------------------|
| 1) <i>Swarna</i> (gold) | 2) <i>Raupya/Rajata</i> (silver) |
| 3) <i>Tamra</i> (copper) | 4) <i>Ayasa/Lauha</i> (iron) |

Sushruta Samhita

According to *Sushruta Samhita* (Sh.Ch. 13/6) *Shilajatu* is of six types-

- | | | |
|------------------|------------------|-----------------|
| 1) <i>Swarna</i> | 2) <i>Rajata</i> | 3) <i>Tamra</i> |
| 4) <i>Lauha</i> | 5) <i>Naga</i> | 6) <i>Vanga</i> |

Ashtang Hridaya

Ashtang Hridaya also followed Sushruta's classification (As.H.U.39/130).

Ras-Grantha

i. **Rasa Ratna Samucchaya**: R.R.S. described three types of *Shilajatu* not mentioning about *Lauhaja* variety i.e. 1) *Swarna* 2) *Rajata* 3) *Tamra*.

ii. **Rasa Ratna Samucchaya** (R.R.S 2/102):

1) *Gomutra Gandhi*: (i) *Sasatva* (ii) *Nihsatva*

2) *Karpura Gandhi*

iii. In commentary of **Rasendra Sara Sangrah**- *Shilajatu* was divided into two types

1) *Girija*: (i) *Kanch* (ii) *Rajata* (iii) *Tamra* (iv) *Lauha* (v) *Vanga* (vi) *Yashada*

2) *Usharaka*: (i) *Kshara* or white coloured (ii) Red coloured like fire.

iv. *Shilajatu* have been mentioned as of two types in **Rasarnava** (Rasarnava 7/18-19).

v. **Anand Kanda** considered *Shilajatu* to be of two types as that of *Rasa Ratna Samucchaya*, but in this text the *Karpura Gandhi* was divided into *Sasatva* and *Nihsatva* (Anandkanda 1/205,206).

vi. **Ayurveda Prakasha** (4/95), **Rasapaddhati** (44) mentioned two variety of *Shilajatu*.

Synonyms of Shilajatu

| Indicating | Synonyms |
|---------------------------|--|
| Origin | <i>Adrija, Adreyam, Ashmajam, Ashmotham, Dhatu, Dhaturam, Girih, Girija, Gaireya, Shila, Shilabhyam, Shaileyam, Shaila, Shilodbhava.</i> |
| State | <i>Jatu, Jatvashmaka, Adritaju, Ashmajatu, Ashmajatukam, Girijatu, Shilajatu, Shilaniryasa, Shilasveda, Shilamahe, Shilavyadh.</i> |
| Mineral property | <i>Shiladhatu, Shailottha, Dhatuja.</i> |
| Season in which it Occurs | <i>Ushnaja</i> |

vii. Different vernacular names of *Shilajatu* are

| | | | |
|-------|----------|---|------------------------------|
| viii. | Hindi | - | <i>Shilajatu</i> |
| ix. | Latin | - | <i>Asphaltum punjabianum</i> |
| x. | English | - | Mineral Pitch |
| xi. | Arabic | - | Hajar – ul – Musa |
| xii. | Bengali | - | <i>Shilajatu</i> |
| xiii. | Dravida | - | Uruguam |
| xiv. | Gujarati | - | <i>Shilajatu</i> |

- xv.** Marathi - Shilajatu
xvi. Malayalam - Kanmadam
xvii. Nepali - Kalo Shilajatu
xviii. Parsi - Momiya Phacyral Yahud
xix. Unani - Momiye or Shilajatu.

Different type of procedure of Shilajatu:-In *Rasa Tarangini* the author has described purification process of *Shilajatu* in detail, which includes not only the condition in which it is purified but also the technique to extract *Shilajatu* as per *Suryatapi* method, where the solvents used are hot water and *Triphala kwatha* (RT 22/69-81).

Test

The tests mentioned in *Ayurvedic* texts are only of a crude type. *RSS*, *RT*, *R.Chu*, *Basavarajeeyam*, *RP* etc. mentioned the testing techniques which are following:-

The drug is supposed to be authentic if -

1. *Shilajatu* is put on fire it erects perpendicularly and burn without smoke.
2. If pure *Shilajatu* is put in water through the tip of a thin erect glass it will come down slowly after spreading like fibre.
3. The pure *Shilajatu* should contain the smell of cow urine.

Colour

| Type of <i>Shilajatu</i> | Colour (<i>Ch.Ch.1/3/57-59</i>) |
|--------------------------|--------------------------------------|
| <i>Swarna Shilajatu</i> | <i>Japapushpanibha</i> (red colour) |
| <i>Rajata Shilajatu</i> | <i>Shweta</i> (white or pale colour) |
| <i>Tamra Shilajatu</i> | <i>Bahirakanthabha</i> (blue colour) |
| <i>Lauha Shilajatu</i> | <i>Guggulukabhasa</i> (black colour) |

Properties

Rasa: Majority of texts believe the *Rasa* of *Swarna Shilajatu* as *Madhura* and *Tikta*. Maximum authors considered *Rajata Shilajatu* as *Katu Rasa* and *Tamra Shilajatu* possesses *Tikta Rasa*. Majority of authors said that *Lauha Shilajatu* possess *Tikta* and *LavanaRasa*. *Vanga Shilajatu* is having *Katu* and *Tikta Rasa*.

Rasa of Shilajatu according to different Text

| Text | Rasa | Amla | Tikta | Kashaya | Madhura |
|-------------------------------|-------------|---------------|--------------|----------------|----------------|
| <i>Charaka Samhita</i> | | <i>Anamla</i> | + | + | + |
| <i>Sushruta Samhita</i> | | + | + | + | - |
| <i>Ashtang Hridaya</i> | | + | + | - | - |
| <i>Rasa Ratnakara</i> | | <i>Anamla</i> | - | + | - |
| <i>Rasendra Sara Samgraha</i> | | + | + | - | - |
| <i>Rasa Ratna Samucchaya</i> | | | | | |
| 1. <i>Swarna</i> | | - | + | - | + |
| 2. <i>Raupya</i> | | | | | + |
| 3. <i>Tamra</i> | | | | | + |
| <i>Ayurveda Prakasha</i> | | + | + | - | - |
| <i>Rasa Tarangini</i> | | + | + | - | - |
| <i>Rasa Paddhati</i> | | <i>Anamla</i> | + | - | + |
| <i>Rasa Kamudhenu</i> | | - | + | + | + |
| <i>Raja Nighantu</i> | | + | + | - | - |
| <i>Dhanvantari Nighantu</i> | | + | + | - | - |
| <i>Bhava Prakasha</i> | | + | + | - | - |
| <i>Shaligrama Nighantu</i> | | + | + | - | - |
| <i>Madanpala Nighantu</i> | | + | - | - | - |

Guna: Guna of different variety of *Shilajatu* are as following-

| Shilajatu | Guna |
|--|--------------------------|
| <i>Swarna, Rajata, Lauha Shilajatu</i> | <i>Sheeta Guna</i> |
| <i>Tamra Shilajatu</i> | <i>Ushna Guna</i> |
| <i>Naga Shilajatu</i> | <i>Ushna, Mridu Guna</i> |
| <i>Vanga Shilajatu</i> | <i>Sandra Guna</i> |

The *Samanya Guna* of *Shilajatu* is considered to be *Sheeta* by *Rasa Paddhati* and *Ayurveda Prakasha*, whereas *Charaka Samhita* and *Rasa Ratna Mala* mentions it to be of *Natiushna-Sheeta*.

Veerya

| Shilajatu | Veerya |
|--|--|
| <i>Swarna, Rajata, Lauha Shilajatu</i> | <i>Sheeta Veerya</i> (BRRS considers <i>Rajata Shilajatu</i> as <i>Ushna Veerya</i>) |
| <i>Tamra, Naga, Vanga Shilajatu</i> | <i>Ushna Veerya</i> |

Vipaka

| Shilajatu | Vipaka |
|---|-----------------------|
| <i>Swarna, Tamra, Lauha, Naga Shilajatu</i> | <i>Katu Vipaka</i> |
| <i>Rajata Shilajatu</i> | <i>Madhura Vipaka</i> |

Table 1: *Karma*.

| <i>Shilajatu</i> | Action on Dosha | <i>Karma</i> |
|-------------------------|--|-------------------|
| <i>Swarna Shilajatu</i> | Vata-Pittashamaka | Rasayana karma |
| <i>Rajata Shilajatu</i> | Kapha-Pittashamaka (exceptions:- Kapha-Vatashamaka - BRRS Pitta-Vatashamaka - RN Pitta shamaka - RSS) | Panduroga nashaka |
| <i>Tamra Shilajatu</i> | Kapha shamaka | Lekhana |
| <i>Lauha Shilajatu</i> | Tridoshghna | Rasayana, Vrishya |

Effect of *Shilajatu* on *Strotovyadhi*-

| <i>Strotasa</i> | <i>Strotovyadhi</i> |
|------------------|--|
| <i>Pranavaha</i> | Kasa, Swasa, Hikka, Hridroga, Urakshata |
| <i>Annavaha</i> | Agnimandya, Shula, Amlapitta, Amadosha, Chardi, Gulma, Visha |
| <i>Udakavaha</i> | Udara roga |
| <i>Rasavaha</i> | Sotha, Kshaya, Jwara, Pandu, Amavata |
| <i>Raktavaha</i> | Arsha, Kamala, Vatarakta, Visarpa, Kushtha |
| <i>Mamsavaha</i> | Galaganda, Granthi, Apachi, Arbuda, Arsha |
| <i>Medovaha</i> | Atisthauhya, Meda, Prameha, Madhumeha |
| <i>Manovaha</i> | Unmada, Apasmara, Murccha |
| <i>Sukravaha</i> | Retodosha, Phiranga, Upadamsha |
| <i>Mutravaha</i> | Ashmari, Mutraghata, Mutrasarkara, Mutrakricha |

Specific properties of *Shilajatu*

1. **Rasayana:** *Rasayana* is one which increases the *Rasa-Raktadi dhatus*, also it increases the longevity, resistance, power and imparts rejuvenation to the body is called *Rasayana* (*Ch.Ch.*, *Sh.S.*, *R.N.*, *RSS*).
2. **Balya:** The drug which increases vitality is called *Balya*. (*RT*, *P.Sharma*)
3. **Medhya:** The drug that is capable of increasing intelligence is called as *Medhya*. There is no rigid rule that *Medhya* drug should possess *Madhura Rasa* and *Sheeta Veerya*. Even *Ushna Veerya* and *Tikta Rasa* drugs can act as *Medhya*. So it is due to *Prabhava* of the drug that some variety of *Shilajatu* though *Ushna* in *Veerya* and *Tikta* in *Rasa*, still increases *Grahana shakti* (grasping power) or *Smarana shakti* (memory power).
4. **Hridya:** *Ushna Veerya*, *Katu Rasa* gives stimulation to the heart function. So *Shilajatu* acts as *Hridya*. Cardiac tonic are drugs which improves the action of heart by increasing the tone and nutrition of the cardiac muscle, where as cardiac stimulants are used as an emergency measure to tide over a critical period. These may act either directly on the muscle, possibly by giving rest i.e. increasing the period of diastole and improving nutrition through better coronary circulation and improving the general health and condition of blood. (*R. Ghosh*)

5. **Deepana:** The drug which stimulates the *Jatharagni* (gastric fire) is called *Deepana*. *Shilajatu* is having the properties of *Katu Rasa*, *Ushna Veerya*, *Ushna* and *Laghu guna*. So it acts as *Deepana*. *Katu Rasa* of *Shilajatu* stimulate the function of the *Vyana*. So the normalised function of the stomach and also help in digestion. Even from the modern idea also bitters aromats are good stimulants.
6. **Pachana:** The drug that disintegrates *Ama* but does not stimulate *Agni*, is called *Pachana*. *Shilajatu* owing to *Katu-Tikta Rasa*, *Ushna Veerya* helps in *Pachana* of *Ama*.
7. **Anulomana:** It gives strength to the intestinal structures and releases the *Vata* from the intestine.
8. **Chedana:** It is one which expels the *Kaphadi doshas* from the *Strotasa* with the force due to *Prabhava* of the drug. *Chedana* drugs are usually belong into *Amla* and *Katu Rasa* and *Teekshna Guna*. (B.P., A.S., S.N.). On the other hand *Chedana* acts two fold functions:-
 - i. *Amla Rasa*- Helps in *vilayana* of obstructive materials.
 - ii. *Katu* and *Tikta Rasa*- Expel the vitiated material from the *Strotasa* with the above diathesis the obstructive *Kapha* and other material have been cleared out from the *Strotasa*. Due to above properties *Shilajatu* acts as *Chedana*.
9. **Vrishya:** It enhances vigour. (P. Sharma)
10. **Lekhana:** *Lekhana* is an agent which scrape *Kapha*, *Meda* etc. from the *Strotsa*. (Sarangadhara, P. Sharma)
11. **Yogavahi:** *Yogavahi* is an agent which enhances the property of other drugs. (B.P., R.N.) According to **Charaka Samhita**- “there is hardly any curable diseases on earth which cannot be controlled or cured with the aid of *Shilajatu*” (Ch.Ch. 1/3/65).

When administered at right time, well prepared and in the right manner, it will secure for the healthy subject the optimum measure of vitality. It removes old age and disease, gives great firmness of the body, increases intelligence and memory and promotes prosperity (Ch.Ch. 1/3/52-53).

Apathya

During the administration of *Shilajatu* the following materials are contraindicated

| Text | Contraindications |
|--|--|
| Charaka Samhita (Ch.Ch.1/3/62) | <i>Kulatha</i> , <i>Vidahi ahara</i> , <i>Guru ahara</i> |
| Sushruta Samhita (Sh.Ch.13/19) | <i>Kapotamamsa</i> , <i>Kulatha</i> |
| Ashtang Hridaya (As.H.U.39/141) | <i>Kulatha</i> , <i>Kapotamamsa</i> , <i>Kakamachi</i> |

- ❖ **Dose** - 500 mg twice a day
- ❖ **Dosage form** - Capsule
- ❖ **Anupana** - Milk

❖ **Chemical constituents**

- ❖ Extensive research has been carried out to determine the exact chemical nature of *Shilajatu*. Earlier work on *Shilajatu* showed that its major organic constituents included benzoic acid, hippuric acid, fatty acids, resin and waxy materials, gums, albuminoids and vegetable matter, with benzoic acid being the active ingredient.^[10]
- ❖ Extensive research in the 1980s showed that the major organic mass of *Shilajatu* comprised humus (60-80%) along with other components such as benzoic acid, hippuric acid, fattyacid, ichthyol, ellagic acid, resin, triterpenes, sterol, aromatic carboxylic acid, 3,4-benzocoumarins, aminoacids and phenolic lipids.^[11]
- ❖ The major physiological action of *Shilajatu* was found to be due to the presence of the bioactive dibenzo alpha-pyrones along with humic and fulvic acids which acted as carrier molecules for the active ingredients.^[12]
- ❖ The composition of *Shilajatu* is influenced by factors such as the plant-species involved, the geological nature of the rock, local temperature profiles, humidity and altitude etc.^[13]

❖ **Uses of *Shilajatu***

- ❖ It is prescribed to treat genitourinary disorder, jaundice, gallstone, digestive disorders, enlarged spleen, epilepsy, nervous disorder, chronic bronchitis, anaemia. *Shilajatu* is given along with milk to treat diabetes. *Shilajatu* has also been ascribed a potent aphrodisiac property.^[14]
- ❖ *Shilajatu* is useful for treating kidney stones, oedema, piles, internal antiseptic and adiposity to reduce fat. *Shilajatu* is prescribed along with *Guggulu* to treat fractures. It is believed that it goes to the joints and forms a callus quickly. The same combination is also used to treat osteoarthritis and spondylitis.^[15]

Studies related to *Shilajatu*

- ★ **Antidiabetic activity:** Various clinical researches also highlight the role of *Shilajatu* in relieving the symptoms of diabetes. *Kalapi et al.* stated that *Shilajatu* was effective in management of diabetic nephropathy. Similar studies show that *Shilajatu* attenuates streptozotocin induced diabetes mellitus and decrease in pancreatic islet superoxide dismutase activity in rats.^[24]

- ★ **Spermiogenic and ovogenic activity:** A study examined the possibility of using *Shilajatu* as a fertility agent. The effects of *Shilajatu* on spermatogenesis and ovogenesis were studied using male and female rats. It was concluded that *Shilajatu* had both a spermiogenic and ovogenic effect in mature rats.^[25]
- ★ **Effect on lipid profile:** An experimental study was conducted to evaluate the effect of *Shilajatu* on lipid profile. The results showed that *Shilajatu* effectively lowered serum cholesterol, triglycerides and LDL. The exact mechanism of decreasing the fat content was not fully understood, it was proposed that *Shilajatu* might have some direct effect on lipid profile. It was also proposed that humic acid may show antiatherogenic effect by inhibiting the lipo-polysaccharide induced expression of vascular cell adhesion molecule.^[26]

Antimicrobial activity: It has been studied that after U.V. treatment *Shilajatu* shows potentially good antimicrobial activity against all available bacterial strains and antifungal activity against *Penicillium chrysogenum*, *B. subtilis*, *E. coli*, *Proteus vulgaris*, *P. aeruginosa*, *K. pneumonia*, *S. Aureus*.^[27]

CONCLUSION

Shilajit is a humus rich blackish-brown substance, which is very useful in many diseases and serves as a potent tonic.

PHYSICAL CONSTANTS

Foreign matter –Not more than 2%

Total ash - Not more than 7%

Acid insoluble ash - Not more than 1%

Alcohol soluble extractive – Not less than 8%

Water soluble extractive - Not less than 35%

Chemical Constituents

Chebulagic acid, ellagic acid (also from bark, heartwood) and its ethyl ester gallic acid (also from seed coat); fructose, galactose, glucose and its galloyl derivative, mannitol and rhamnose and bellericanin protein and oxalic acid (seed); oxalic acid and tannins (bark); palmitic, oleic and linoleic acids (kernel and its oil).

Pharmacological Activities

Purgative, antifungal, antihistaminic, activity against viral hepatitis and vitiligo, antiasthmatic., bronchodilatory, antispasmodic, antibacterial, CNS stimulant, amoebicidal, antistress and endurance promoting activity.

Chemical Constituents

A good source of vitamin C, carotene, nicotinic acid, riboflavine, Indole acetic acid and four other auxins, two growth inhibitors, phyllembic acid and phyllembin (fruits) and fatty acids (seed oil, procyanidin, and tannin (bark); ellagic acid, lupeol, oleanolic aldehyde and 0-acetyl oleanolic acid (root) tannins, polyphenolic compounds; corialgin, ellagic acid, alkaloids, and phyllantine (leaves & fruits).

Pharmacological Activities

Spasmolytic, mild CNS depressant, hypolipidaemic, antiatherosclerotic, antimutagenic, antimicrobial, antioxidant, immunomodulatory, antifungal, antitumour, hypoglycaemic, anti-inflammatory, antibacterial, antiulcer, adrenergic potentiating, HIV-1 reverse transcriptase inhibitory action.

Formulations and Preparations

Brahmarasayana, Chyavanaprasha, Dhatri Lauha, Dhatri Rasayana, Triphala churan, Amalakyavaleha, Amalakyadi kwatha Phalarishia, Dhatriyashita

Chemical Composition of Gomutra

The chemical composition of Gomutra is described in the Book "GOMUTRA MAHAUSHADHI" written by Raj Vaidya Shri Reva Shanker Sharma (Raj), published by Calcutta Pinjarapol Society and the Indian Agriculture Research Institute, New Delhi.

Nitrogen (N₂)

Sulphur (S)

Ammonia (NH₃)

Ammonia gas (NH₃)

Copper (Cu)

Urea [Co(NH₂)₂]

Phosphate (P)

Manganese (Mn)

Calcium (Ca)

Vit. A, B, C, D, E.

Lactose (C₆H₁₂O₆)

Water (H₂O)

Creatinine (C₄H₇N₂O₂)

Other minerals

Iron (Fe)

Uric acid (C₅H₄N₄O₃)

Sodium (Na)

Carbonic acid (HCOOH)

Salt (NaCl)

COMPOSITION

| | | | |
|---------------|-----------------|--------------------|------------|
| Ammonia | Nitrogen | Sulphur | Copper |
| Iron | Urea | Uric acid | Phosphate |
| Sodium | Potassium | Manganese | Calcium |
| Carbolic acid | Sodium chloride | Vit. A, B, C, D, E | Lactose |
| Enzymes | Water | Hippuric acid | Creatinine |

Bioactive Substances and Hormones

| | | |
|-----------------------------|--------------------------|---------------------------|
| 1. <i>Urokinase</i> | Epithelium growth factor | Colony stimulating factor |
| 2. <i>Growth hormone</i> | Erythropoietin | Gonadotropins |
| 3. <i>Trypsin inhibitor</i> | Anticancerous substance | - |

Erythropoietin hormone present in urine may be one of the reasons that *Gomutra* is useful for anemia.

Role of Media (Shodhana Varga) In Shodhana

In the course of Shodhana method the drugs of mineral origin are subjected to various grinding, heating, fomenting, subliming, and distilling etc. processes which in turn remove soluble, evaporable and washable impurities from these drugs. For this purpose these drugs are either treated with acidic, alkaline and neutral types of vegetables extractives/ liquids or with oily materials in the presence or absence of heat for specified period. In some cases only heat treatment is given in a specified apparatus so as to remove their volatile or thermo-stable impurities. Grinding in hot & cold condition is also done to reduce and disperse the particles of the materials and thus exposing maximum portion of the drug to the purifying material. By subjecting to different processes, the drugs are made homologous to the cells, their toxicity gets reduced and acceptability by the cells is increased. The media used in the process of

shodhana has an important role in breaking down or altering the chemical constituent that is not required. It is very interesting that specific media is used for specific substance. The media acts like a solvent to dissolve the material for easy separation from the insoluble impurities to eradicate toxic chemical substances from the drugs and also helps in physical transformation of some of metals and minerals. Various physico-chemical changes occur depending upon the selection of the media during the shodhana such as reduction in particle size, variation in density and granular size, variation in elemental composition of major elements and addition as well as deletion of minor elements from the raw material. Various techniques along with different media are referred in Ayurvedic texts for the shodhana, knowing different nature of impurities; ancient scholars have suggested different types of media for their purification as were considered necessary. There are abundant examples of ancient scholars of Rasa Shastra using different media and material of different sources in the process of shodhana depending on the Drug and purpose.

Shilajit for Antioxidant Protection

Nowadays it seems that every other nutraceutical and its cousin touts antioxidant properties—which can make it hard to get too excited over a new antioxidant. However, when a nutraceutical has demonstrated activity against five different key types of free radicals, it is worth taking notice. Such is the case with shilajit. An ORAC 5.0 test (the gold standard in antioxidant testing) was conducted on PrimaVie shilajit.

CONCLUSION

Shilajit is a humus rich blackish-brown substance, which is very useful in many diseases and serves as a potent tonic. Considering these evidences shilajit or its constituents may be used as an integral component of health care preparation and in general tonic but the use of modern techniques to reduce the associated risk is desirable.

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