

## A Comprehensive Review of *Shilajatu* (Black Bitumen or Mineral Pitch)

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### Abstract

*Shilajatu* (Black bitumen or mineral pitch), also called mineral pitch, is the result of a long process of breaking down plant matter and minerals. It is a sticky, black, tar-like substance that comes from rocks in high mountain ranges. *Shilajatu* is categorized as one among eight *Maharasa* (group of minerals) of Ayurvedic pharmacopoeia. But its source of origin is still under controversy, many researchers claim that *Shilajatu* exuding from the rocks of mountains is basically derived from vegetative source. As per the classical texts like *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hrudaya* and other texts like *Rasaratna Samuchaya*, etc. *Shilajatu* is *balya*, *vrushya* (powerful aphrodisiac), *rasayana* (rejuvenator), *medhya*, *vajikara* (aphrodisiac), *dehadadyakrut* and indicated in many diseases like *prameha* (diabetes mellitus), *pandu* (anemia), *shotha* (edema), *yakshma* (tuberculosis), *jwara* (fever), *agnimandya* (loss of appetite), skin disorders. Although *Shilajatu* is mentioned under the heading of treatment of many diseases, but detailed description of *Shilajatu* is found in *rasayana prakarana*. In this heading its origin, variety, method of use, dose and duration are mentioned. *Pathya- apathya* during administration of *Shilajatu* along with its utility and therapeutic uses has been described. This review recollects the information related to *Shilajatu* from *samhitas*, *samgraha granthas*, *nighantus* and other texts.

**Keywords:** *Shilajatu*; Mineral pitch; *Rasayana*; *Prameha*.

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### Introduction

*Shilajatu* is a natural herbo-mineral substance considered as the miracle of Himalayas found mainly in the pristine mountains of Nepal altitudes between 2500 and 5000 m.<sup>1</sup> It is also found in most of the sedimentary rocks especially in Afghanistan, Bhutan, China, Pakistan, USSR, Tibet as well as Norway, where they are gathered from steep rock faces at altitudes between 1000 and 5000 m.<sup>2</sup> The word *Shilajatu* comprises two terms, one *shila* and other *jatu*. The word *shila* denotes rock, which is considered as one of the most important sources. The term *jatu* denotes a blackish brown substance,

which is similar to *laksha*. Thus *Shilajatu* is the exudates of rocks having blackish brown color and oozes out from steep rocks of mountain during summer because of intense sun heat.

From the classification point of view most of the *rasa* texts placed it in the *Maharasa* group of the drug of mineral origin. *Shilajatu* among all drugs, having unique properties as it has been mentioned that *Shilajatu* having properties of all *Maharasa*, *Uparasa*, *Parad*, *Loha* and *Ratna* with their anti-ageing and salvation properties.<sup>3</sup> The existence and use of *Shilajatu* was a closely guarded secret of the Yogis of Himalayas for many centuries. The Indian Yogis considered it as God's gift and a nectar of

longevity. That is why *Shilajatu* is considered one of the wonderful medicines of Ayurveda. Even Acharya Charaka also says that “there are hardly any curable diseases which cannot be controlled or cured with the aid of *Shilajatu*.”<sup>4</sup>

Nepali *Shilajatu* is preferred because of its balance of ingredients, dynamic activity, and natural pH balance. Isagenix uses a pharmaceutical-grade of *Shilajatu*.

### Synonyms of *Shilajatu*

*Shilajatu*, *shailey*, *shilaj*, *shaildhatuj*, *shilamaya*, *shilasweda*, *shilaniryas*, *ashmaj*, *ashmajatuk*, *adrij*, *ashmotha*, *ashmlaksha*, *gaireya*, *giricahvaya*, *cilahva*, *giriya*, *caila*, *giriya* (Dash 1991), etc.

### Source and Test for Genuiness of *Shilajatu*

Regarding the sources and genuinity of drug there are few difference of opinions. According *Charaka Sushruta* etc., it is the exudates of rocks having blackish brown color and oozes out from steep rocks of mountain during summer because of intense sun heat. And according Acharyas few tests were mentioned to check the genuiness of *Shilajatu* like.<sup>5</sup>

- When put on fire it must burn without smoke and should take shape of *linga*.
- When put in to water it spread like a thread up to the bottom without being dissolved.
- It should look black.
- Pure *Shilajatu* should contain the smell of cow's urine

Many researchers claim that *Shilajatu* exuding from the rocks of mountains is basically derived from vegetative source. According to *Sushruta*, in the months of May-June the sap or juice of plants comes out as gummy exudation from the rocks of mountains due to strong heat of sun and *Rasarangini*. Dwarishtarang also claim that the *Shilajatu* is an exudation of latex gumresin, etc. of

plants which comes from the rocks of mountains in presence of scorching heat. But the exact source of the origin of *Shilajatu* is still under controversy. Previous work on *Shilajatu* showed that it is mainly composed of humus – the characteristic constituent of soils-together with other organic components. Some workers think that *Euphorbia royleana* Boiss. plants are responsible for origin of *Shilajatu*, because this plant is very rich latex.

The *Shilajatu* is subjected to rigorous testing and comes with a Certificate of Analysis certifying its purity.<sup>6</sup>

- As per the references available to Mineralogy, is oxygenated hydrocarbon of diverse types, which is amorphous in nature luster is that of Black that has a melting point of 90-1000 degrees Celsius and burns with bright flame.
- It is soluble in turpentine oil. It is a result of high degree of coalification that grade into Kerogen shale and eventually to petroleum.
- *Shilajatu* is liquidifies and gets converted into liquid state which is rich in humic acid due to vegetal substance resulting from roots.
- In nature it takes place in regions of coalification subjugated by abundant vegetation like Himalayan region of India.

### Classification of *Shilajatu* (Table 1)

As per *Rasaratnasamucchaya*, Acharya Vagbhatta has mentioned two types of *Shilajatu*.<sup>7</sup>

1. *Gomutra Gandhi Shilajatu* – it has two sub category (a) *Sahsatoa* (b) *Nihatoa*
2. *Karpura Gandhi Shilajatu*

In *Rasajalnidhi*, *Shilajatu* has divided in to two types:<sup>8</sup>

1. *Giriya* – it is again divided into 6 types based on the presence of metal in it (a) *Kanchana* (b) *Rajata* (c) *Tamra* (d) *Lauha* (e) *Vanga* (f) *Yashada*.

**Table 1:** Types of *shilajatu* on the basis of metallic content, according to different texts

Charaka	Sushruta	Vagbhatt	Rasa Tarangini	Rasendra Chudamani	Rasa Kaumudi
<i>Swarna</i>	+	+	+	+	+
<i>Rajata</i>	+	+	+	+	+
<i>Tamra</i>	+	+	+	+	+
<i>Lauha</i>	+	+	+	+	+
-	<i>Vanga</i>	+	-	-	+
-	<i>Sisaka</i>	+	-	-	+

2. *Usharaka* – it is again divided into two types:  
(a) *Kshara* or white colored (b) Red colored like fire.

### Chemical Constituents of *Shilajatu*

*Shilajatu* contains 85+ minerals in ionic form, vitamins, fulvic acid and very important phytonutrients. The fulvic acid in *Shilajatu* is in its most natural and purest form. Fulvic acid alone can transport the minerals through the thick cell walls. *Shilajatu* has 85+ minerals apart from fulvic acid and can instantly supply them to the cells. It can effectively prolong cell life and keep it healthy for a very long time. So, yogis considered it Amrita or elixir of life.

As per recent researchers it has unique composition as a phytocomplex, very rich in fulvic acid, and also they have hypothesized that *Shilajatu* is produced by the decomposition of plant material from species such as *Euphorbia royleana* and *Trifolium repens*.<sup>9,10</sup>

This decomposition seems to occur through centuries, and on this basis, *Shilajatu* is considered a millenary product of nature. However, few more studies have identified that several other plant organisms may generate *Shilajatu*, such as molds as *Barbula*, *Fissidens*, *Minium*, and *Thuidium* and other species like *Asterella*, *Dumortiera*, *Marchantia*, *Pellia*, *Plagiochasma*, and *Stephencella-Anthoceros*.

### Identification

Identification can be carried out based on the morphological features, organoleptic features and powder microscopy, TLC, etc. with advanced methods. And also the API (Ayurvedic Pharmacopeia of India) standards were used for authentication.

### Major Bioactive Compounds in *Shilajatu*<sup>11</sup>

Generally, native *Shilajatu* contains two classes of organic compounds:

**Humic substances:** Humic substances are the major organic constituents of native *Shilajatu*, present in an amount of about 80–85% therein, and have molecular weights ranging from several thousand for humic acids (HAs), and up to several million for polymeric humins (HMs), to only a few hundred for its fulvic acid (FAs) component. These substances also are found in soils and sediments distributed over the earth's surface, occurring in almost all terrestrial and aquatic environments. Humic substances are produced by the interactions of plants, algae, and mosses (bryophytes), with microorganisms, by a process known as humification. Humification of latex- and resin-bearing plants is primarily responsible for the production of the water-soluble humic substances.

**Non-humic substances:** The non-humic substances of *Shilajatu* are low molecular weight (Mw)

**Table 2:** Shows the shodhan drugs and purification technique

S. No	Texts	No. of Bhavana	Shodhan dravya
1.	<i>Charaka Samhita</i> Ch.Chi.1/3/51	7	<i>Vataghna</i> , <i>Pittaghna</i> <i>Kaphaghna</i> drugs.
2.	<i>Sushruta Samhita</i> Su.Chi.13/10	1	<i>Salasaradi Gana</i> .
3.	<i>Astanga Hridaya</i>	7	Drugs according to <i>Dosha &amp; Vyadhi</i>
4.	<i>Rasarnava Rv</i> 7/21	1	Cleaning with <i>kshara</i> , <i>amla</i> and <i>gomutra</i> or with <i>bhavana</i> with <i>triphala kvatha</i> , <i>goghrita</i> and each drug <i>Bhrngaraja Svarasas</i>
5.	<i>Rasa Ratna Samucchaya</i> RRS 2/117–118	1	Cleaning with <i>ksara</i> , <i>amla</i> , <i>gomutra</i> and <i>bhavana</i> with each of the following: <i>godugdha</i> , <i>Triphala kvatha</i> , <i>Bhrngaraja swarasa</i>
6.	<i>Rasa paddhati</i>		Separation of <i>santanika</i> from <i>gomutra Gandhi pasana shilajatu &amp; bhavana</i> with <i>asanadi ganas &amp; salasaradi gana kvatha</i> .
7.	<i>Rasendra Chintamani</i>	7	<i>Bhavana &amp; tridosaghna</i> drugs.
8.	<i>Ayurveda Prakash A.P</i> 4/106		Cleaning with water to remove external impurities.
9.	<i>Rasa Tarangini R.T</i> 22/ 79–80	Ext. purification 1Bhavana 3 each	Hot water & <i>Triphala kvath</i> . <i>Gomutra</i> or <i>Bhrngaraja swaras</i>

(Contd.)

S. No	Texts	No. of Bhavana	Shodhan dravya
10.			<i>Rasajalanidhi</i>
	Method 1	1	With <i>Triphala, godugdha, bhrngaraj</i>
	Method 2		Dissolve <i>Shilajatu</i> stones in water and collect the supernatant portion of fluid, then it is subjected to the <i>dhuma</i> of <i>agurvadi gana</i> and finally evaporate the liquid to get <i>santanika</i> with <i>vataghna, pittaghna</i> and <i>kaphaghna</i> dravyas.
	Method 3	7	<i>Bhavanas</i> with each drugs are selected according to disease.
	Method 4		Dissolve <i>Shilajatu</i> in the hot decoction made up of <i>nimba, guduchi, ghrta</i> then evaporate the liquid to get <i>santanika</i> .
	Method 5	31	<i>Triphala kwatha</i> each of the following drugs: <i>dashamula kwath, guduchi swaras, bala kwath, patola kwath</i> and <i>gomutra</i> . Dry the above <i>bhavita shilajatu</i> and give <i>bhavana</i> with the following drugs as necessary, <i>astavarga, satavari, Asvagandha, vidari, varahikanda, draksa, jiraka, salaparni, rasna, puskaramula dantimula, citraka, pippali, indrayava, cavya, sugandhi bala, katuki, srngi, patha, and salasaradi gana</i> .
	Method 6	1	<i>Shilajatu</i> becomes purified when subjected to <i>bhavana</i> with <i>ksara, amla</i> and <i>gomutra</i>
	Method 7	1	1 <i>Godugdha &amp; Triphala kwatha</i> or <i>bhrngaraj swaras</i> .
	Method 8		Take <i>Shilajatu</i> with <i>Guggulu, ksara, amla</i> & put them in <i>swedan yantra</i> & give <i>swedan</i> for one year.

compounds of plant and microbial origin, occurring in and around *Shilajatu* bearing rocks. The remaining nonhumic organic masses in *Shilajatu* comprise a mixture of low Mwaromatic, aliphatic alicyclic, and heterocyclic (N-and S-containing) compounds. Of particular biological interest are low Mw oxygenated dibenzo- $\alpha$ -pyrones (DBP) and hydroxyacetophenones (HAPs). These basically include— a. Dibenzo-alpha pyrones, phospholipids, triterpenes and phenolic acids of low molecular weight. b. Trace elements (Fe, Ca, Cu, Zn, Mg, Mn, Mo, P)

### Shodhana of *Shilajatu*

*Shodhita Shilajatu Matra (dose):*<sup>12</sup> The dose play very important role in the action of the drug. If the dose is less than the mentioned one, then the drug fails to act and if the dose is more, then it causes hazardous effects.

*Dose according to Sushruta Samhita:*<sup>13</sup> In *Sushruta Samhita* dose of *Shilajatu* is 100 pala for achieving *pushti, bala, varna*, curing *madhumeha* and longevity up to 100 years (thousand *pala* for attaining the life up to one thousand years).

*Anupan:*<sup>14</sup> *Shilajatu* has versatile therapeutic uses after administered with different *anupan* and are illustrated in Table 4. *Rasa Tarangini* gave detailed description of different uses of *Shilajatu*.

As a outlined review, results from various *samhitas* and different *Rasashastra* texts studies indicate *Shilajatu* possesses many qualities, including *Kustha, Vata roga, Dipan, Pachan, Jwara, Osteoporosis, Pregnancy to infertile women, Strength, anti-inflammatory, antitumor, and immunomodulatory properties*, as well as exerting an influence on the endocrine, nervous, and cardiopulmonary systems. According to the *samhitas* and *Rasashastra* texts *Shilajatu* used in the various form or medium. Including arthritis and other musculoskeletal disorders, and hypertension. Effect of *Shilajatu* on the immune system, central nervous system, hemopoetic system, and general growth promotion to form a basis for further studies.

*Rasayana effect of Shilajatu:* *Shilajatu* contains bioactive chemicals like fulvic acid, humic acids, dibenzo-alphapyrones, triterpenes, phenolic acids and some trace elements. It is considered as a top

**Table 3:** Dose of *Shilajatu* according to *Charaka Samhita*

Types	Quantity	Duration
<i>Uttama</i>	1 pala (4 tola)	7 weeks
<i>Madhyama</i>	½ pala (2 tola)	3 weeks
<i>Avara</i>	1 karsha (1 tola)	1 week

rated adaptogen which is highly chelated and bioavailable having properties like antioxidants, anti stress, analgesic, anti inflammatory, anti allergic, cognition enhancer, lowering blood sugar levels, etc.<sup>15</sup>

*Antidote for Shilajatu:*<sup>16</sup> The disease caused due to the use of impure *Shilajatu* may be cured by taking *maricha* (pepper) in doses of ¼ tola mixed with ghee for seven days.

**Table 4:** Indication and mode of administration of *Shilajatu* according to *Rasa Tarangini*

S. No	Anupana	Disease
1.	Honey	Mutrakricchra
2.	<i>Dashamula kvatha</i> + sugar	Asthilika, vata basti
3.	<i>Varunadi kvatha</i>	Mutraghata & asmari
4.	<i>Guduchi kvatha</i>	Mutraghata & mutrakricchra
5.	Sugar + camphor	Mutatrita, mutra jathara
6.	<i>Gokshura kvatha</i>	Mutrakricchra
7.	<i>Kakolyadi gana</i>	Klaibya
8.	<i>Lauha bhasma, Svarna makshika bhasma</i> Ghee, <i>Haritaki, Vidanga</i>	Rajayakshma
9.	<i>Viratarvadi gana kvatha</i>	Mutrakricchra
10.	Sugar + milk	Pain due to <i>prameha</i>
11.	<i>Guggulu + Sunthi + Pippali + Gomutra</i>	Uruh stambha
12.	<i>Lauha + Svarna makshika bhasma</i>	Rakta vridhhi
13.	<i>Arjuna kvatha</i> for 2 months	Hrid roga
14.	<i>Agnimantha svarasa</i> for 2 months	Sthaulya
15.	<i>Bhavana with Salasaradi gana kvatha</i> for 21 days and use with same decoction for 2 months	Madhumeha Asmari Mutrasarkara
16.	<i>Pippali, Pashanabheda</i>	Prameha
17.	<i>Ela churna</i> + washings of rice	Mutraghata, Mutrakricchra
18.	<i>Kapoor</i> (Ext. Appl.)	Wounds / Bruise
19.	<i>Haridra churna</i>	Kumbha kamala
20.	<i>Lauha + Svarna bhasma bhavana</i> with <i>Sarjaka kvatha</i> (1 ratti).	<i>Masurika Jvara</i> etc.

## Discussion

As outlined above, results from various *Samhitas* and different *Rasashastra* texts studies indicate *Shilajatu* possesses many qualities, including *Dipaka, Pachaka, Kusthaghna, Vata rogahara, Jwaraghna*, anti-inflammatory, antitumor, immunomodulatory and used in osteoporosis, pregnancy to infertile women, gives Strength as well as exerting an influence on the endocrine, nervous, and cardiopulmonary systems. According to the *samhitas* and *Rasashastra* texts *Shilajatu* used in the various form or medium.

Including arthritis, other musculoskeletal disorders and hypertension. Effect of *Shilajatu* on the immune system, central nervous system, hemopetic system, and general growth promotion to form a basis for further studies but not enough evidence to provide a firm scientific basis for definitive therapeutic uses.

## Conclusion

*Shilajatu* literally means 'conqueror of mountains and destroyer of weakness' in Sanskrit and is oozes out from steep rocks of mountain and its description

can be traced since *Samhita* period. Classical texts of Ayurveda describe this gelatinous substance under *maharasa varga* and other categories also and recommended various *shodhana* procedures before its internal use. It is stated to be undoubtedly effective as a cure for all diseases as well as *rasayan* (rejuvenative) able to increasing longevity from 100 to 1000 years. But it is required to explore more of its potential within the field of medicinal and pharmaceutical sciences for novel and fruitful application of this drug, also it is need of the hour to have a scientific study before and after its *shodhana*.

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