INTERNATIONAL JOURNAL OF PHARMACY AND ANALYTICAL RESEARCH

ISSN:2320-2831

IJPAR |Vol.5 | Issue 3 | July - Sep -2016
Journal Home page: www.ijpar.com

Research article *Open Access*

Preparation of herbo-mineral formulation comprised of *Shilajit* & *Amalki*

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ABSTRACT

Shilajit is a blakish brown colour herbomineral medicine, obtained from high altitude of mountain from India and many part of word. *Shilajit* is comprised of humic matter that contains 60-80% of fulvic acid (FA) and humic acid (HA). The biological activity of *Shilajit* is mainly attributed to these humic compounds HA and FA. *Shilajit* possess anti-inflammatory, antioxidant, antimutagenic, antitoxic, antiviral, antitumor and apoptotic properties. These properties make *Shilajit* useful agents to enhance the quality of life in cancer patients. In this review we have focused on pharmaceutical processes of *Shilajit* and *Amalaki* finally preparation of herbomineral medicine to assessed quality of life in cervical cancer patients. *Shodhan* (purification) of *Shilajit* were done via three methods i.e. *Shilajit* treated with *Guduchi kasaya* (Batch I), *Shilajit* treated with *Triphala kasaya* (Batch II) and *Shilajit* treated with water (Batch III). Yield of *Shiajit* in Batch I was 37.5 %, Batch II was 50.00 % and Batch III was 29.60 %.

Keywords: Herbomineral, *Rasayan*, Antioxident, *Shodhan*.

INTRODUCTION

Shilajit is a blackish brown exudation found in the surroundings of Himalayas. It is a mineral pitch that oozes from the rocks of the Himalayas, in the summer months. It is said to carry the healing power of these great mountains [1]. It is also found in most of the sedimentary rocks especially in Afghanistan, Bhutan, China, Nepal, Pakistan, where they are gathered from steep rock faces at altitudes between 1000 and 5000 m. It has been used for centuries as a rejuvenator and anti-aging compound and for treating a number of disease conditions [2]. *Shilajit* is comprised of humic matter that contains 60-80% of fulvic acid (FA) and humic acid (HA), mineral 20-40%) and up to 5% of trace elements (Fe, Ca, Cu, Zn, Mg, Mn, Mo, P) [3]. The biological activity of *Shilajit* is mainly due to Humic acid & Fulvic acid these two compound having efficacy to treat the cancer [4]. *Shilajit* possess anti-inflammatory, antioxidant,

antimutagenic, antitoxic, antiviral, antitumor and apoptotic properties. These properties make *Shilajit* useful agents to enhance the quality of life in cancer patients. The *Charaka* Samhita discusses *Shilajit* in a chapter on rejuvenation therapy (*Rasayana*) [5]. It has been proposed that *Rasayana* is acting as like adaptogenic substance [6]. When gradually taken, it tends to improve the strength and complexion of the body [7]. This echoed in the *Astanga Hrdayam* which also states that it is the best rejuvenator [8]. Modern scientific research has systematically validated a number of properties of *Shilajit* and has proven that *Shilajit* is truly a panacea in oriental medicine [9]. The biological effects of *Shilajit* have been ascribed to two distinct classes of compounds. The low molecular weight bioactive organic compounds, such as oxygenated dibenzo-α-pyrones, act as the active substances, and medium molecular weight fulvic and humic acids act as carrier molecules for in vivo transportation of these bioactive molecules [10]. Traditional uses primarily focus on diabetes and diseases of the urinary tract, but also include inflammatory disorder, tumors, enhances potency of body, and even insanity [11]. Pharmaceutical study includes mainly identification, collection of crude drugs & its various pharmaceutical processing like *Shodhan*, *Bhavana* etc, for enhancing the therapeutic effect of a prepared drug. In this era of globalization, it is the need of time to explore the scientific validation of *Ayurvedic* herbomineral formulation. So for this work was carried out to validate pharmaceutical procedure to establishing the SOP (standard operating procedure) for developing *Shilajit* & *Amalaki* capsule.

Pharmaceutical Study

Pharmaceutical study includes mainly procurement of raw drugs, its authentication & pharmaceutical processing like *Shodhan*, *Bhavana etc*. *Shodhan* is a process of purification & detoxification by which physical, chemical blemishes & toxic materials are eliminated at the same time some beneficial active principle are adding in our formulation via *Shodhan*, & *Bhavana* processes which ultimately incorporate therapeutic efficacy in that particular formulation and by means of *Shodhan* substances are subjected for further processing and finally conversion in to final product as a formulation.

Procurement and Authentication of Drugs

Raw *Shilajit* stone was purchase from local market of Kota, Rajsthan. *Amalaki* which was used for making fine powder one of the ingredient in *Shilajit* & *Amalaki* was purchase from konia market, Varanasi, Uttar Pradesh. *Triphala* procured from Gola Deenanath, local market of Varanasi, Uttar Pradesh. Whereas raw *Guduchi* was collected from campus of Banaras Hindu University, Uttar Pradesh. Plant materials were authenticated by Prof. Naval Kishor Dubey, Department of Botany, Institute of Science, Banaras Hindu University, Varanasi, India. *Shilajit* samples was authenticated by Prof. Neeraj Kumar, Department of Rasa Shastra, Faculty of Ayurveda, Institute Medical Sciences, Banaras Hindu University, Varanasi.

MATERIALS & METHOD

Coarse powder of raw *Shilajit* was done before *Shodhan* process, fresh *Guduchi* was procured and cut in to small pieces, after that crush them for making *kasaya*. Coarse powder of *Triphala* was done for making *kasaya*. Stainless steel vessels, heating device, mixture, weighting machine, mortar & pestle, hot air oven, plastic jar, empty capsule and cotton cloth for straining of *kasaya* were required.

Shodhan Process of Shilajit

Shilajit & *Amalaki* a herbomineral formulation were prepared in three batches, batch I *Shilajit* was treated with *Guduchi kasaya*, batch II *Shilajit* was treated with *Triphala kasaya* and batch III was treated with water only. All three batches were divided in to sample A, sample B & sample C for standardization. Separately *Amalaki* powder was prepared and mixed together with powdered *Shilajit* of different batches for preparation of final formulation.

Shilajit Treated with Guduchi Kasaya [12]

In batch I, 1.33 kg crude *Shilajit* (powdered in to small pieces) was dissolved in 2.66 litre of hot *Guduchi kasaya* (prepared by adding 8 times of water and reduced till ¼ of water) and marked as steel vessel 1, it was mixed properly by stirring and kept for 24 hr. for settling down of water insoluble material (impurities), after 24 hrs. The supernatant liquid was filtered with the help of cotton cloth into another steel vessel 2. Again 2.66 litre of hot

Guduchi kasaya was added to vessel 1 and both the vessels were kept for 24 hrs, next day supernatant of vessel 2 was decanted into steel vessel 3 and same time supernatant of vessel 1 into vessel 2. All the above processes were repeated four times means supernatant of all the vessels were collected in to vessel 5 gradually, all steps were taken for sample A, B and C. Now this decant liquid containing *Shilajit* was evaporated by heating firstly on hot plate and then in hot air oven at 450C for 9.30 hrs, finally completely drying *Shilajit* was powdered and collected.

Shilajit Treated with Triphala Kasaya [13]

In batch II, 1.0 kg crude *Shilajit* (powdered in to small pieces) was dissolved in 2 litre of *Triphala kasaya* (prepared by adding 8 times of water and reduced till ¼ of water) by proper stirring left it for 24 hrs. After that supernatant of vessel 1, decant in to vessel 2. Again 2 liter of *Triphala kasaya* was added in to vessel 1, stir it properly and left it for 24 hr. Next day supernatant of vessel 2 was decant in vessel 3 and 2 liter hot *kasaya* was added in to vessel 1. Above procedure were repeated four time and supernatant of all four vessel collected in to vessel no. 5 gradually, same procedure were taken for sample A, B and C. Now water was evaporated by heating device and after remain in to semisolid dried it completely in to hot air oven at 450C for 9 hr. Finally collect it powdered and procure it for making formulation.

Shilajit Treated with hot water [13]

In batch III, 1.66 kg crude *Shilajit* (powdered in to small pieces) was dissolved in 3.32 litre of hot water and marked as steel vessel 1, it was mixed properly by stirring and kept for 24 hr. for settle down of water insoluble material (impurities), after 24 hrs. The supernatant liquid was filtered with the help of cotton cloth into another steel vessel 2. Again 3.32 litre of hot water was added to vessel 1 and both the vessels were kept for 24 hrs, next day supernatant of vessel 2 was decanted into steel vessel 3 and same time supernatant of vessel 1 into vessel 2. All the above processes were repeated four times means supernatant of all the vessels were collected in to vessel 5 gradually; same steps were taken for sample A, B and C. Now this decant liquid containing *Shilajit* was evaporated by heating firstly on hot plate and then in hot air oven at temperature 500C for 10 days, finally completely drying *Shilajit* was powdered and collected.

Mixing of *Shialajit, Amalaki* Powder and capsule filling

After *Shodhan* of *Shilajit* of different samples of different batches, complete dried powder of *Shilajit* and *Amalaki* powder which is separately prepared were mixing together uniformly and collect in to plastic jar. Capsule filling was done manually of each batch. Hard gelatin Capsule was used of capacity 500 mg. Finally filled capsule were procure in plastic bottle and labeled as per the rule of Drug & Cosmetic act 1940.

RESULTS

Yield of *Shilajit* in batch I (*Guduchi* treated) 37.35 %, while batch II (*Triphala* treated) having yield of 50.00 % and batch III (water treated) having 29.60 % yield were gotten respectively. Details are given in table (1.1, 1.2, 1.3, 1.4).

Table 1.1: Details of *Shodhan* process of *Shilajit* of Batch I.

S. N.	Name of Drugs	Batches	Samples	Initial weight	Principle	Media used	Quantity of Media	Duration	Final weight	Yield %
1.	Raw *Shilajit*	B I	A	1.33 kg	*Prakshalana*	*Guduchi Kasaya*	10.64 L	22 days	496.0 gm	37.29
2.	Raw *Shilajit*	B I	B	1.33 kg	*Prakshalana*	*Guduchi Kasaya*	10.64 L	20 days	489.3 gm	36.78
3.	Raw *Shilajit*	B I	C	1.33 kg	*Prakshalana*	*Guduchi Kasaya*	10.64 L	18 days	506.7 gm	38.09

Table 1.2: Details of *Shodhan* process of *Shilajit* of Batch II.

S.	Name of	Batch	Sam	Initial	Principle	Media	Quantity	Durati	Final	Yield

N.	Drugs	es	ples	weight		used	of Media	on	weight	%
1.	Raw *Shilajit*	B II	A	1.00 kg	*Prakshalana*	*Triphala Kasaya*	8.00 L	18 days	482 gm	48.20
2.	Raw *Shilajit*	B II	B	1.00 kg	*Prakshalana*	*Triphala Kasaya*	8.00 L	19 days	512 gm	51.20
3.	Raw *Shilajit*	B II	C	1.00 kg	*Prakshalana*	*Triphala Kasaya*	8.00 L	22 days	506 gm	50.60

Table 1.3: Details of *Shodhan* process of *Shilajit* of Batch III.

S. N.	Name of Drugs	Batches	Samples	Initial weight	Principle	Media used	Quantity of Media	Duration	Final weight	Yield %
1.	Raw *Shilajit*	B III	A	1.66 kg	*Prakshalan*	Hot Water	13.28 L	18 days	491.13 gm	29.58
2.	Raw *Shilajit*	B III	B	1.66 kg	*Prakshalan*	Hot Water	13.28 L	20 days	489.50 gm	29.48
3.	Raw *Shilajit*	B III	C	1.66 kg	*Prakshalan*	Hot Water	13.28 L	19 days	493.45 gm	29.72

Table 1.4: Comparative yield of *Shilajit* in Batch I, Batch II and Batch III.

S. N.	Batches of *Shilajit*	Principle Adopted	Media Used	Weight of Raw *Shilajit*	Weight of *Shuddha Shilajit*	% yield of *Shilajit* of three Batches
1.	Batch I	*Prakshalan*	*Guduchi Kasaya*	4.00 kg	1492 gm	37.35 %
2.	Batch II	*Prakshalan*	*Triphala kasaya*	3.00 kg	1500 gm	50.00 %
3.	Batch III	*Prakshalan*	Hot water	5.00 kg	1474.08 gm	29.60 %

Table 3.8: Solid content of *Triphala churna* and *Guduchi kasaya.*

S. N.	Samples	Quantity of *Dravya*	Quantity of water	Ratio (*Dravya*: water)	Solid Content	Duration	% Yield
1	*Triphala*	500 gm	4.00 L	1:8	101.15 gm	3.16 hrs	20.23
2	*Guduchi*	500 gm	4.00 L	1:8	36.25 gm	2.95 hrs	7.25

DISCUSSION

Crude *Shilajit* is generally available in local market, it has been procured from high altitude rocks containing huge of impurities or can be obtained from Pharmaceutical industries. Researches has shown that natural form of *Shilajit* is often contaminated by varying amounts of impurities such as mycotoxins, heavy metal ions, polymeric quinones, reactive free radicals etc. among them mycotoxins are produced by mold or fungi and can cause illness or death in man. Free radicals can be harmful to cells and are believed to be a causative factor in aging. Polymeric quinones are an oxidation product of quinic acid which is found in some plants [14].

Due to intermingling of impurities in raw *Shilajit* there are great need of *Shodhan* (purification). Therefore, *Shilajit* was subject to *Shodhan* process with different liquid media i.e. *Guduchi kasaya* (batch I), *Triphala kasaya* (batch II) and hot water (batch III) before internal use. *Shodhan* of *Shilajit* with *Triphala kasaya* gives more yield than *Guduchi kasaya Shodhit Shilajit*, whereas *Guduchi kasaya Shodhit Shilajit* having more yield than water *Shodhit Shilajit*. It was observed that *Triphala kasaya* has more percentage of solid content than *Guduchi kasaya*. So percentage gain is much more in *Triphala kasaya Shodhit Shilajit* as compared to *Guduchi kasaya Shodhit Shilajit* which is relatively very low, while water *Shodhit Shilajit* having lowest comparatively yield because there

having no solid suspended matter in water in relation to *Guduchi* & *Triphala kasaya*. Total solid content is comparatively more in *Triphala kasaya* and low in *Guduchi kasaya* this is due to more suspended particulates in *Triphala* and relatively low solid particulates in *Guduchi kasaya*.

CONCLUSION

Shilajit extracted by *Guduchi kasaya* provides more percentage yield compared to *Shilajit* extracted by using water as a media. Further *Shilajit* extracted by *Triphala kasaya* having highest yield as compared to *Guduchi kasaya* and water. Whereas total solid content was higher percentage in *Triphala kasaya* in compare to *Guduchi kasaya.*

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