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Review Article

A REVIEW ON SHILAJIT: A RICH PHYTOCOMPLEX WITH REJUVENATING ACTIVITY

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ABSTRACT

Shilajit is a multi-component herbal mineral material with varying consistency that emerges from rock layers in numerous mountain ranges worldwide, particularly the Himalayas. Its color ranges from pale brown to blackish brown. It has been discovered to be composed of an intricate blend of microbial and plant metabolites present in the rock rhizospheres of its native habitat, as well as organic humic compounds. In Unani medicine, shilajit has been utilized as an adaptogen and elixir for thousands of years. It is said to have several therapeutic qualities, some of which have been confirmed by scientific analysis. It is a strong, extremely safe dietary supplement that balances energy and may be able to prevent several illnesses. The purpose of this paper is to explore the role and expand the understanding of Shilajit as a rich Phyto complex rejuvenating substance with pharmacological activities in the contemporary era.

KEYWORDS: Shilajit; *Muqawwi*; *Triyaq*; Unani medicine

INTRODUCTION

The World Health Organization (WHO) defines traditional medicine (TM) as the application of plant, mineral, and animal-based remedies, either separately or in combination, to treat and prevent diseases and preserve health[1]. The Himalayas are home to the majority of the naturally occurring substance shilajit. It was produced throughout history by the gradual microbial degradation of particular plants[2]. From May through July, the mountains release shilajit, an exudate. It is a clear, smooth gum that is smooth and has colours ranging from pale brown to blackish brown.[3]

At elevations of 1000 to 5000 meters, it can be found in the lower Himalayan ranges in Uttarakhand, Himachal Pradesh, Kashmir, and Arunachal Pradesh[3], Tibet, Afghanistan, Nepal, Bhutan, Pakistan, and the former USSR are included.[3] Humus and naturally occurring organic plant components make up Shilajit.[3] Shilajit was referred to as an inorganic mineral, bitumen, asphalt, mineral resin, exposed plant fossil due to Himalayan height, and so on until the mid-1980s. It has recently been demonstrated through focused investigation that Shilajit was mostly made up of modified and fresh residues of humus, which is an organic substance that is characteristic of soils[4]. According to WHO estimates, TM is used by about 80% of the world's population for medical reasons. In light of this, an increasing amount of research on plant-based medications is being done globally, mostly ignoring the other two components of traditional medicine (TM), namely animal- and mineral-based medications[1]. This page concentrates on Shilajit, a rich Phyto complex, a particular mineral ingredient.

Shalajit the traditional drug was surveyed for its identity, chemical composition, uses, and other related concepts from the Unani medical literature. The internet sources for the information were also searched using the keywords ‘Shilajit’, ‘medicinal uses of shilajit’, animal experiments on Shalajit’, etc. PubMed, Medline, ScienceDirect, and other search engines were referred for the reported activities and reviews about Shilajit. The observations were noted, analyzed, and compared to collate the information in this review study.

Concept of rejuvenation: Basic cellular processes and tissue homeostasis begin to deteriorate with age, leading to an organ's gradual malfunction. The notion of an elixir of youth or rejuvenation has existed for millennia, despite the belief that aging was irreversible in the past. There are now other methods to postpone aging, according to recent scientific studies.[5] The distinctive characteristics of Unani medicine are the idea of protecting an organ, promoting *Hararate-gharizia* (Innate heat), and increasing the life force of significant organs. The idea is to keep organs healthy by shielding them from harmful stimuli and enhancing their ability to adapt to a variety of physiological environments. Many medications fall into this category of effects.[6] The Unani system of medicine discovered the fact thousands of years ago that the weakening of the immune system of the body is nothing but aging. In Unani medicine, the immune system and *quwate-mudabiria badan* have been given primary importance in the establishment of health and disease. when the physical powers of the body are impaired, a person becomes weak and eventually ill.[7]

VERNACULAR NAMES: Sanskrit: Shilajit, Shilajatu, Shilaras, and so on; English: Asphalt, mineral pitch, Jews pitch, bitumen; Hindi: Shilajit, ral-Yahudi; Asphaltum punjabinum in Latin; Hindi: shilajit, Silajatu; Gujarati: Silajita Russian: Myemu and mumie; German: Mumie or salhumin; Arabic: Hajar-ul-musa; Persian: Momiai-faqurul-yahud; Tamil: Perangyum, uerangyum, kalmatam.[1,2]

CHEMICAL CONSTITUENTS: Phospholipids, low molecular weight phenolic acids, triterpenes, dibenzo-alpha pyrones, tiny peptides, uronic acids, phenolic glucosides, amino acids, and fulvic acid. In addition, it includes about 84 different minerals in their ionic form, such as copper, zinc, iron, calcium, magnesium, phosphorus, and silver. [1,2,8]

The examination of Shilajit crude extract using liquid chromatography-high resolution electrospray ionization mass spectrometry (LCHRESIMS) indicated the existence of 17 bioactive chemicals, each of which was explained by its predicted mass spectrum (m/z), retention time, and frequency. Alkaloids, tri-terpenoids, flavonoids, organic acids, and phenolic acids were among the different classes that this technology recognized. With prominent peaks at retention durations (min.) of 0.99, 1.36, 4.97, 5.21, 11.6 16.59, and 31.25 for fulvic acid and gallic acid.

MIZAJ: Hot dry.[10]

IDENTIFICATION OF SHILAJIT: When pure Shilajit is mixed with water it makes water red.[11]

TASTE: Sweet, sour, bitter.[11]

PHARMACOLOGICAL PROPERTIES

Rejuvenating property: In the traditional system of medicine, it is believed to increase longevity, and is rejuvenating and through immunomodulation and rejuvenation, slows down the aging process. [8,12]

Anti-ulcerogenic / anti-stress–adaptogen Activity: Shilajit was discovered to have anti-ulcerogenic properties due to its capacity to reduce peptic output and stomach acid secretion. It was also discovered to be useful in limiting stress models. Acharya et al determined from their research that Shilajit therapy resulted in a reduction in ulcerogenicity in rats with a 4-hour pylorus ligation. The results of this study support the recommendation to take Shilajit for peptic ulcers.[13] According to Goel et al research Shilajit improved the carbohydrate/protein ratio and reduced the stomach ulcer index, both of which are signs of a stronger mucous barrier. These findings support the application of Shilajit for peptic ulcers.[14] By reducing acid-pepsin secretion and cell shedding, fulvic acid and 4-methoxy 6-carbomethoxy bi phenyl—two active ingredients derived from Shilajit—were discovered to have ulcer-preventive properties.[15]

Anti-inflammatory activity: Shilajit has strong anti-inflammatory properties. It has demonstrated a 77 percent reduction in acute chemically induced edema. Additionally, the anti-inflammatory qualities aid in reducing inflammation**.** According to a study, when Shilajit (50 mg/kg) was taken orally, it significantly reduced the amount of inflammation caused by carrageenan-induced pedal edema. [8,13]

Effect on Testosterone levels: According to Pandit et al study, taking Shilajit for a straight 90 days increased total testosterone, free testosterone, and dehydroepiandrosterone (DHEAS) considerably ($P < 0.05$) when compared to placebo. The levels of gonadotropic hormones (FSH and LH) were stable.[16]

Antioxidant Activity & Free Radical Scavenging: After neutralizing free radicals, processed shilajit demonstrated strong antioxidant activity on its own and the ability to regenerate, or recycle, ascorbic acid. Shilajit's dihydroxy benzo-alpha-pyrones were responsible for the ascorbic acid's regeneration[8]. Strong antioxidant shilajit also has the advantage of being able to pass through the blood-brain barrier. Depending on the concentration of Shilajit, it exhibits antioxidant and free radical scavenging properties against SO3-, OH radical, and paramagnetic nitric oxide (NO).[17]

Memory enhancement and anxiolytic activity: According to Jaiswal et al research, Shilajit exhibited notable nootropic and anxiolytic properties. According to Shilajit's observed neurochemical research, there is a reduction in the 5-hydroxytryptamine turnover in rat brains, which is linked to an increase in dopaminergic activity in albino rats, which enhances their memory and anxiolytic activity.[18]

Antiallergic activity: Shilajit has also been observed to promote mast cell degranulation and exhibit anti-allergic action against histamine releasers. Consequently, it can also be applied to the management of allergic diseases.[8]

Gastrointestinal disorders and dehydration: Shilajit is a significant medication that aids in the gastrointestinal tract's ability to break down and absorb food. It is also helpful in the treatment of digestive problems, nausea, and vomiting. It is used as a tonic and aids in better food utilization because it is a good source of nutrients. It keeps the body's balance between catabolism and anabolism and prompts the pancreas to release insulin. Additionally, it has a laxative effect on the human body. It also acts as a gastrointestinal tonic.[3]

Radiation protection: Shilajit's photoprotective activity makes it a potential treatment for skin and ocular conditions.[3]

Acclimatization & Immunostimulant: Shilajit has been demonstrated to have adaptogenic qualities since it activates splenocytes and macrophages, both of which are highly beneficial for boosting the body's immune. As a result, it has been demonstrated to slow the growth of tumors and is highly beneficial for acclimatizing to environments in hilly regions.[3]

Analgesic: Reduced and alleviated joint pain and inflammation are facilitated by the anti-inflammatory and antioxidant qualities. Joint pain appears to be alleviated by the effects of neurotransmitters in the brain.[3]

Antidiabetic activity: For many years, traditional medicine has employed shilajit to both prevent and treat diabetes.[8,19]

Immunomodulatory: By keeping the integrity of the membrane, shilajit, and its corresponding mixed fractions functioned as cell growth factors in both normal and malignant cells. As a result, Shilajit would be confirmed as an effective immunomodulator that is currently available. It was discovered that Shilajit extract raised white blood cell activity.[8, 20]

Nootropic: Processed Shilajit and its active ingredients (fulvic acids and total ethyl acetate fraction) were shown to dramatically improve memory retention and learning.[2]

Antiviral Activity: Shilajit possesses both immune-stimulating and viral load-lowering abilities.[21]

Anti-AIDS activity: Shilajit possesses qualities that both boost immunity and lower viral load. Clinical trials were carried out on AIDS patients using a multi-component natural product formulation that included three essential and three supportive substances. One of the important compounds in this formulation was shilajit.[8]

Spermatogenic and Ovo genic effects: In India, shilajit is considered an aphrodisiac. Shilajit is renowned for raising

people's libido back to that of teenagers**.** Shilajit elevates the vital energy that gives one sexual and metaphysical strength. Utilizing Shilajit to revitalize life. When Shilajit was given to rats, there was a noticeable rise in both the number of ovulations and sperm in the female and male epididymis.[22]

Decreased serum Cholesterol activity: A Shilajit study found that in subjects given a high-cholesterol diet, Shilajit decreases serum phospholipids, triglycerides, liver cholesterol, and serum cholesterol.[23,24]

Increased muscular strength & serum hydroxyproline levels: Joshua et al study showed that taking 500 mg of Shilajit daily for eight weeks increased the retention of maximum muscle strength after the fatiguing procedure and lowered baseline HYP**.** Thus, Supplementing with 500 mg of shilajit daily resulted in beneficial changes to the muscles and connective tissue.[25]

Alzheimer's Disease: According to research, fulvic acid inhibits the 4RMBD tau fragment aggregation process (the fourth microtubule-binding domain). Fulvic acid can prevent the tau protein in its entirety from aggregating. The breakdown of generated tau fibrils is aided by fulvic acid; however, further research is needed to determine its effectiveness in vivo.[26]

Postmenopausal benefits: Daily use of this Shilajit extract supplementation supports bone mineral density (BMD) in postmenopausal women with osteopenia by reducing the oxidative stress, inflammation, and increased bone turnover associated with estrogen deficiency in this population at higher risk of osteoporosis and bone fractures.[27]

Shilajit can also be used as a lithotriptic, antiseptic, and anodyne, it also has an anti-asthmatic effect and can be used in parasitic infections, chronic fever, jaundice, obesity, and thyroid disorders.[3] It also possesses anti-anxiety,[8] antistress activity,[12] and antifungal activity. [28]

DISCUSSION

The World Health Organization (WHO) defines traditional medicine (TM) as the use of plant, mineral, and animal-based remedies, either alone or in combination, to treat and prevent diseases and preserve health.[1] Shilajit is a naturally occurring material that is mostly found in the Himalayas from May through July.[2,3] Shilajit is a smooth, clear exudate that emerges from the mountains and that ranges in color from pale brown to blackish brown.[3] In the traditional system of medicine, Shilajit is classified as '*rasayan*' (meaning rejuvenator and immunomodulator). Shilajit is believed to increase longevity rejuvenating and slow down the process of aging by rejuvenation and immunomodulation.[8,12] The distinctive characteristics of Unani medicine are the ideas of protecting an organ, promoting *Hararate-gharizia* (Innate heat), and increasing the life force of significant organs.[5] Shilajit is a long-used herbal remedy for neurological, diabetic, urogenital, immunological, cardiac, and digestive diseases as well as a performance booster. Given Shilajit's diverse medical qualities, it would not be overstated to suggest that it may be a cure-all for all human ailments and that it is one of nature's greatest gifts to humanity.[3] Shilajit is an excellent source of dietary supplements and is high in phytochemicals.[1,2,8]

Shilajit is a panacea in oriental medicine, according to current research that supports these assertions. Research using contemporary scientific methods is necessary to understand how traditional medicine's active principles function at the molecular and cellular levels, as there are numerous traditional medicines on the market with varying claims regarding their therapeutic activity. This could lead to more traditional medicine panaceas.

CONCLUSION

A naturally occurring herb-mineral compound, shilajit is found on hilltops in regions with long winters and little precipitation. Shilajit is a blackish-brown, humus-rich material that works wonders as a powerful tonic and in a variety of illnesses. Indigenous medical systems frequently use it to treat a variety of illnesses and hasten the process of regeneration. Shilajit is a powerful and safe dietary supplement that may be able to prevent several diseases. However, its main uses in medicine seem to be related to its anti-aging, blood sugar-stabilizing, libido-boosting, general physical strengthening, enhanced brain function, immune system support, arthritis management, hypertension, and obesity effects. While some of these claims have been verified, more human clinical trials are required to classify it as a medication for treating disorders in people.

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