



Review Article

KESHYA KARMA OF YASHTIMADHU (*GLYCYRRHIZA GLABRA* Linn): A COMPREHENSIVE REVIEW

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ABSTRACT

Khalitya (Hair fall) being very common as well as progressive disease today has created the need for medical science to develop easy and cost effective hair care regimens and remedies. *Yashtimadhu* has been a very common drug in Indian homes since long, but lesser known is its role as a hair growth promoting drug. *Ayurveda* described the use of *Yashtimadhu* (*Glycyrrhiza glabra* Linn) for the management of various *Shirorogas* like *khalitya* (hair fall), *Palitya* (greying of hair) and *Indralupta* (loss of hair in patches) in classical texts in various pharmacological formulations. Keeping this fact in view, an attempt has been made to collect the information related to *Yashtimadhu* from different *Samhitas* (treatises), *Samgrahagranthas* (compendia) and other texts, regarding its therapeutic uses in hair fall and related diseases and also in related formulations. Present information may help the researchers to develop new herbal leads for the management of various conditions.

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INTRODUCTION

Universally hair fall is an extremely common disorder that affects roughly 50% of men and perhaps as many women older than 40 years^[1]. As many as 13% premenopausal women reportedly have some evidence of androgenetic alopecia. However, the incidence increases greatly in women following menopause, and, according to some authors, it may affect 75% of women older than 65 years^[2].

Ayurveda is a science of life which imparted society with so many herbs to be used in human illnesses. Since time immortal human race has been using these herbs as drugs as home remedies. In present scenario Ayurvediya pharmaceutical drugs have grasped an important role in medical science. One such medicinally rich plant is *Yashtimadhu* (*Glycyrrhiza glabra* Linn). Liquorice, or licorice, is the root of *Glycyrrhiza glabra* Linn. from which a sweet flavour can be extracted. The liquorice plant is a legume native to southern Europe, India, and parts of Asia.

The word liquorice/licorice is derived from the Greek word (*glukurrhiza*), meaning sweet root where *glukus* means sweet and *rhiza* means root. It has been traditionally known and used as medicine in Ayurveda for rejuvenation. Licorice

locally known as Mulethi, has been revered for centuries as a medicinal herb in Ayurveda. Besides possessing numerous medicinal properties, it is also a popular flavoring herb as it is 50 times sweeter than sugar, due to the presence of a compound called glycyrrhizin.

Apart from being a potent mental tonic as described in *Charaka Samhita*^[3], it has been used as a *Samidha Dravya* (drugs used in holy fire in Hindu culture) also. Its many therapeutic actions include *Varnya*^[4] (skin repairing), *Kushthaghna* (Skin disorders), *Keshya* (hair growth property), *Kanthyia* (speech promoting and useful in throat disorders like cough etc.), *Shonitasthapana*^[5] (bleeding disorders) and *Rasayana* (promoting overall body health). It has a significant role not only in the physical illness but also in a variety of mental disorders. *Yashtimadhu* has been used as a single herb as well as in combinations in various formulations.

In the present review article an attempt has been made to compile information pertaining to *Keshya* effect of *Yashtimadhu* including formulations from different classical texts in systemic manner.

MATERIALS AND METHODS

Various available *Samhitas* (Classical texts), *Nighantus* (Lexicons), *Samgraha granthas* (Compendia) and other relevant texts related to *Prayoga* (Therapeutic use) were referred. All the compiled data was arranged systematically and presented with their respective classification, properties, *Panchavidha Kashaya Kalpana* (Dosage form), *Adhikara* (Prime indication) and mode of administration (internal or external).

RESULTS

Yashtimadhu is included in 11 *Mahakashaya* in *Charaka Samhita*. In *Charaka Samhita*, *Yashtimadhu* is mentioned by different synonyms like *Madhuka*, *Yashtyavha*, *Klitaka*, *Madhuyashti*, *Yashti*. In *Sushruta Samhita*, various synonyms mentioned in different contexts include *Madhuka*, *Yashtyahwa* and *Madhukahwa*. *Yashtimadhu* has been mentioned in various preparations to be used in different indications and has been included in ten out of thirty three *Ganas* mentioned there in. References pertaining to the *Keshya* effect of *Yashtimadhu* have been mentioned in table 1 according to various *Samhitas*.

Table 1: References of *Yashtimadhu* found in *Samhita*

Sr. No	References	Mentioned in	Mode of administration	Indication
1	Ch.su.5/63	<i>Anutaila</i>	Internal (<i>nasya</i>)	<i>Nasya Tridoshnashak, Indriya balprada</i>
2	Ch.su.25/40	<i>Agrya Dravya</i>	Not mentioned	<i>Chakshushya, Vrishya, Keshya, Kanthya, Varnya, Virajniya, Ropaniya</i>
3	Ch.chi.26/163	<i>Mayura ghrita</i>	Not mentioned	<i>Shiroroga</i>
4	Ch.chi.26/269	<i>Mahanila taila</i>	Internal and external (<i>Paan, nasya, abhyanga</i>)	<i>Palitya</i>
5	Ch.chi.26/276	<i>Prapaundreekadi Taila</i>	Internal (<i>Pratimarsha nasya</i>)	<i>Palitya</i>
6	Ch.chi.26/279	<i>Tiladi yoga</i>	External (<i>murdha pralepana</i>)	<i>Kesha vardhan, Kesha ranjan</i>
7	A.H.su.20/37	<i>Anutaila</i>	Internal (<i>nasya</i>)	<i>Palitya, Indriya balprada</i>
8	A.H.U.24/26	<i>Kalka - Lepa</i>	External (<i>murdha pralepana</i>)	<i>Darunaka</i>
9	A.H.U.24/40	<i>Kalka Lepa</i>	External (<i>murdha pralepana</i>)	<i>Keshvardhan, Ranjana</i>
10	A.H.U.24/44	<i>Taila - nasya</i>	Internal (<i>nasya</i>)	<i>Sarva shiroroga</i>
11	A.H.U.24/47	<i>Mayura ghrita</i>	Internal and external (<i>Paan, Basti, Nasya, Abhyanga</i>)	<i>Sarva-urdhavajatrugata roga</i>
12	A.H.U.32/29	<i>Taila - nasya</i>	Internal (<i>Nasya</i>)	<i>Nilika, Palitya, Vyanga</i>
13	Ha.tri.40/34	<i>Kumkumadi ghrita</i>	External (<i>Murdha taila</i>)	<i>Shiroroga (all types)</i>
14	Ka.ka.4/33	Content of <i>panchbhautika tail</i>	External (<i>Murdha taila</i>)	<i>Khalitya, Palitya, Shiroroga</i>
15	Sh.S.M. 9/155	<i>Yasthimadhuka taila</i>	Internal (<i>Nasya</i>)	<i>Palitya</i>
16	Sh.S.U. 11/18	<i>Lepa</i>	External (<i>Murdha pralepana</i>)	<i>Darunaka</i>
17	Sh.S.U. 11/24	<i>Lepa</i>	External (<i>Murdha pralepana</i>)	<i>Indralupta</i>

Table 2: Classification according to Varga/Gana in Samhita

Sr. No.	Name of texts	Varga/Gana
1.	Charaka samhita ^[6] (11)	Jivaniya, Sandhaniya, Varnya, Kanthya, Kandugna, Snehopaga, Vamanopaga, Asthapanopaga, Mutravirajaneeya, Angamardaprashamana, Shonitasthapana
2.	Sushruta samhita ^[7] (8)	Haridradi, Brihatyadi, Kakolyadi, Sarivadi, Anjanadi, Ambasthadi, Nyagrodhadi, Utapaladi
3.	Ashtanga samgraha ^[8] (5)	Sarivadi, Anjanadi, Nyagrodhadi, Vachadi, Ambasthadi
4.	Ashtangahrudaya ^[9] (10)	Vamana, Niruhana, Pittagna, Sarivadi, Padmakadi, Anjanadi, Aragwadhadi, Haridradi, Ambasthadi, Nyagrodhadi

Table 3: Classification according to Varga in Nighantu

Sr. No.	Name of Nighantu	Varga
1.	Astanga nighantu	Sarivadi gana, Anjanadi gana, Priyangvadi gana, Nyagrodhadi gana
2.	Dhanvantari nighantu	Guduchyadi varga
3.	Nighantushesha	Gulma kanda
4.	Sodhala nighantu	Guduchyadi varga
5.	Madhav Dravyaguna	Vividhoushadhi varga
6.	Madanapala nighantu	Abhayadi varga
7.	Kaiyadeva nighantu	Aushadhi varga
8.	Raja nighantu	Pipalyadi varga
9.	Bhavaprakasha nighantu	Haritkyadi varga
10.	Shaligrama nighantu	Haritkyadi varga
11.	Abhidhana Ratnamala	Madhura skandha
12.	Shankar nighantu	Dwitiya pada
13.	Nighantu Aadarsha	Palashadi varga
14.	Priya nighantu	Shatapushpadi varga

Pharmacological properties Yashtimadhu^[10,11]**Rasa** - Madhura**Guna** - Guru, Snigdha**Veerya** - Sheeta**Vipaka** - Madhura**Doshagnata** - Vatapittashamaka**Rogagnata** - Vranashotha, Visha, Khalitya, Palitya, Shastrabhighataja vrana, Vatavikara, Vatarakta, Amavata, Shiroroga, Vamana, Trishna, Vibandha, Udarashoola, Amlapitta, Paittika apasmara, Hikka, Raktavikara, Raktalpata, Raktapitta, Shwasa, Kasa, Swarabheda, Yakshma, Urogata vrana, Urahkshata, Parshwashoola, Mootrakrichchra, Pooyameha, Paittika prameha, Shukrameha, Varnavikara, Kandu, Charma roga, Jeerna jwara, Samanya daurbalya, Netra roga**Karma**- Dahashamaka, Keshya, Vedanasthapana, Shothahara, Nadibalya, Medhya, Chhardinigravana, Trishnanigravana, Vatanulomana, Mridurechana,

Shonitasthapana, Kaphanissaraka, Kanthya, Mootrala, Mootravirajaneeya, Shukravardhaka, Varnya, Kandughna, Jwarashamaka, Jeevaneeya, Sandhaneeya, Rasayana, Balya, Chakshushya.

Therapeutic uses of Yashtimadhu in various Ayurvedic texts

1. After application of kshara, ghee mixed with Yashtimadhu should be applied on haemorrhoids.^[12]
2. In case of pain in head, sides and shoulders the parts should be sprinkled with milk and decoction of Yashtimadhu.^[13]
3. Payasa (rice-milk) prepared with Yashtimadhu and mixed with ghee should be taken in hoarseness of voice.^[14]
4. Pressed snuff should be used of Yashtimadhu mixed with honey or Pippali (Piper longum Linn.) mixed with fine sugar.^[15]

5. Paste of *Yashtimadhu* mixed with *Nimba* (*Azadirachta indica* A. Juss) acts as wound cleaning agent.^[16]
6. Paste of *Yashtimadhu* and *tila* mixed with ghee is wound healing.^[17]
7. Ghee mixed with *Yashtimadhu* pacifies burns caused by alkali.^[18]
8. Milk processed with *Sharkara*, *Kashmarya* (*Gmelina arborea* Linn.) and *Yashtimadhu* promotes growth of foetus.^[19]
9. Cow's milk with *Yashtimadhu* and sugar promotes lactation.^[20]
10. Intake of *Yashtimadhu* powder with milk acts as *Rasayana* particularly intellect-promoting.^[21]

Pharmacological Activities

Yashtimadhu has been experimentally proven to have Anti-tussive & expectorant activity^[22], Antioxidant activity^[23], Skin toning^[24], Skin lightening and skin tightening activity^[25], Anti-inflammatory activity^[26,27], Hepatoprotective activity^[28], Anti-malarial activity^[29], Memory enhancing activity^[30], Immuno stimulatory effects^[31], Anti-viral effects^[32,33] and Anticoagulant activity^[34,35].

It has also been proven experimentally for its hair growth stimulatory activity. The hydro-alcoholic extract of liquorice showed good hair growth promoting activity. Comparison between liquorice extract and the standard drug used (Minoxidil 2%) showed that, 2% concentration of liquorice extract showed better hair growth stimulatory activity than 2% Minoxidil. Thus, after efficacy and safety analysis, it has been concluded that, liquorice has a significant hair growth activity and it can be safely used in herbal formulations in treatment of various types of Alopecia.^[36]

In another study, Animals treated with petroleum ether extract of *G. glabra* roots showed longer hair than those treated with either minoxidil or control. Furthermore, the time (5-13 days) for commencement of hair growth and to reach complete hair growth was least in extract-treated animals, followed by those treated with minoxidil (6 - 19 days). A maximum of 76 % of hair follicles were in anagenic stage (active growth phase of hair) in extract-treated animals, compared to 66 and 45 % in minoxidil-treated and control groups, respectively. Thus, the study indicates that the petroleum ether extract of *G. glabra* roots has potentials as a hair growth promoting agent for females.^[37]

DISCUSSION

Though being famous as a potent antitussive in Indian homes, it is widely used in cough as a throat clearing drug, lesser known is the fact that it is mentioned amongst the best *Rasayana* drugs (tonic) in *Charaka Samhita*. *Yashtimadhu* works as a *Rasayana dravya* because of its *Madhura rasa*, *Madhura vipaka*, *Sheeta virya* and *Guru Snigdha* properties. Here comes a query that in spite of being *Guru Snigdha* in its pharmacological properties, it is used as antitussive. The mode of clearing the throat here is different. *Yashtimadhu* excretes out the *Kapha* but not by *Lekhana* or *Chedana* process, rather its *guru Snigdha Guna* (property) liquefies the bronchial secretions adhered to the walls of the air canals and alveoli and merges the secretions within, thereby extracting the bronchial secretions. Being *rasayana* it also helps the injured tissues to get repaired at micro levels in the bronchioles. *Yashtimadhu* has been told in dozens of other indications as well because it works at both *dosha-pratyaneeka* level and *vyadhi-pratyaneeka* level.

Probable mode of action of *Yashtimadhu* as *Keshya dravya*

Rasayana (tonic) property of *Yashtimadhu* accelerates and purifies the *Uttarottara dhatu paaka* (consecutive *dhatu* formation) and hence is responsible for the processes like proper *dhatu poshana* (nutrient assimilation), Proper *kitta vibhajana* (proper expulsion of toxins from the body) and *updhatu* (nutrient and byproducts) formation. *Kesha* (Hair) being the *updhatu* (subtype) of *Majja dhatu* and *Kitta* (by product) of *Asthi dhatu*, gets nourishment and support for its formation and sustenance. This process directly aids the formation of hair formation as hair is the indicator of proper balanced biological activities of human body. *Khalitya* and *Palitya* are the conditions which arise due to the vitiation of *Pitta dosha* predominantly. *Yashtimadhu* being *Sarva dosha shamaka* (pacifying whole body *Doshas*) hence pacifies the *Pitta* vitiation in the body through its *Sheeta virya* (cold potency) hence helps reduce the progress of both *Khalitya* and *Palitya*. *Yashtimadhu* here can be used internally in various *Kalpanas* (pharmaceutical dosage forms) so as to aid its *Rasayana* (tonic) and *Keshya* (hair growth promoting) properties according to the intellect of the physician and *Doshika* (diseased) condition of the patient and disease.

It is also helpful for removing the extra layer of dead skin etc because *Keshabhumi mala* (dead skin) is *Guru*, *Pichhila* and *Snigdha* in its *Guna*

(pharmacological properties) and *Yashtimadhu* on local application merges the dead skin layer particles and washes it away. Here *Yashtimadhu* can be used as *Lepa* or *Tailpaaka* (medicated oil preparations) or *Kwath* (decoction) for hair wash and cleaning. Also, being *Vatapitta shamaka*, it relieves the symptoms of *Khalitya* like *Kesha-Rukshata* (dryness of hair), *Kesha bhoomi parushya* (pricking sensation in scalp), *Kesha bhoomi daha* (burning sensation in scalp).

CONCLUSION

Yashtimadhu is attributed with pharmacological properties i.e., *Madhura rasa*; *Madhura Vipaka*; *Sheeta Virya*; and useful to fight various disease conditions such as *Shwasa* (respiratory diseases), *Kasa* (cough), *Twaka rogas* (skin disorders), *Mutrakrichha* (urine disorders), *Rakta vikaras* (hematological disorders) and skin and hair disorders etc. It is used in many classical formulations, as well as in wide variety of dosage forms and also used in many diseased conditions both externally and internally. Above review reveals that *Yashtimadhu* has been prescribed internally as well as externally in 17 combinations thereby indicating its safety and efficacy through both internal and external routes of administration. Being mentioned as a potent *Keshya dravya* in *Ayurveda* texts it should be inculcated in daily hair maintenance regimens internally as well as externally by the physicians because it is safe and easy to use. Also, only a few works are attributed on *Keshya karma* (hair growth promoting properties) of this plant and there is a large scope for research in the field of cosmetology. Hence, it is required to explore its hair growth and maintenance promoting potential within the field of medicinal sciences for novel and fruitful application of this plant.

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