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A Critical Review on Snuhi (*Euphorbia neriifolia Linn.)* with Special Reference to Ayurvedic Nighantus

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HUMAN

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ABSTRACT

Snuhi botanically identified as *Euphorbia neriifolia Linn,* belongs to Euphorbiaceae family is a well-known medicinal plant in Ayurvedic system of medicine. It envisages to possesses numerous medicinal properties. Snuhi is a large branched, erect, glabrous, xerophytic shrub occuring wild on rocky ground throughout Central India and extensively grown as a hedge plant[1]. Etymological derivation of drug Snuhi reflects it secrets milky white latex which is ued as drastic purgative [2].Rasaratnasamuchaya mentioned eleven types of Upavisha and Snuhi is one among them[3], which were less toxic in nature and not so lethal but produce certain toxic symptoms on consumption and administration. They are having less toxicity [4]. Snuhi kshara is prepared by processing the ash of Snuhi Panchanga and it is used for various therapeutic purposes. It has various proved pharmacological actions like immunomodulatory, wound healing, anti-bacterial activity, hepatoprotective activity, anti-inflammatory, analgesic, antioxidant, diuretic, anti-psychotic activity, anti-diabetic and anti-hyperlipidemic activity. A review of research work done regarding ancient and Ayurvedic properties of Snuhi, *Euphorbia neriifolia Linn* is mentioned here.

INTRODUCTION

Euphorbia neriifolia Linn, belongs to Euphorbiaceae family commonly known as Snuhi is an important medicinal plant. Almost all parts of Snuhi are of medicinal importance and used traditionally for the treatment of various ailments. Acharya Charaka and Susrutha both highlighted its importance as Tikshna Virechaka dravya. Acharya Susrutha mentioned its use in preparation of Kshara which is mostly use in Arsha, Kustha, Bhagandara etc.

1. NIRUKTHI

Sneyiti ksheeram ithi[5]

2. REFERENCES FROM DIFFERENT PERIODS

Samhita Period

Susrutha Samhita

Sutra sthana

In Ksarapaka vidhi Adhyaya, Snuhi is an ingredient in Pratisaraneeya kshara.

In Misraka Adhyaya, Snuhi is included in Muskakadi gana.

Samsodhana Samsamaniya Adhyaya, Snuhi is one among the Virecana dravyas.

In Virecanadravya Vikalpa Vijnaniya, it is mentioned that milky sap of Sudha is best among purgative saps. Snuhi is an ingredient of Sauviraka Kalpana.

Cikitsa Sthana

In Sadyovrana Cikitsitam, it is mentioned that Sudha is an ingredient of Dravantyadi Taila.

In Vataroga cikitsita, It is said that Snuhi is an ingredient in Sneha lavana (Kanda lavana) and Kalyanaka lavana.

In Bhagandara Cikitsitam, Sudha is one constituent in Ropana Taila and Visyandana Taila.

In Kustha Cikitsitam, Snuhi is widely used in the many formulations they are Tiktaka ghrta, Tutthadi lepa, Mahanila ghrta, Vajraka taila and Mahavajraka taila.

In Prameha pidaka Cikitsitam, Snuhi is one ingredient in Dhanvantara ghrta.

In Udara Cikitsitam, patient of Dusyodara should be made to purge daily for a month or fortnight with ghee boiled with fresh juice of Saptala, Sankhini and Mahavrksa and it is mentioned as ingredient of Virecana gutika.

Charaka Sutra

Charaka Chikitsa Sthana

In Udara Chikitsa, patient suffering from vibandha is administering food prepared with adding leaves of Sankhini, Snuhi etc.

In Arso Chikitsa, Haridra mixed with Sudha Kshira or Snuhi kshara paste is applied on haemorrhoids.

Nighantu period

Based on first drug

Sl.No	Varga	References
1	Guduchyadi Varga	DN, SN, BN, Saligrama N
2	Abhayadi Varga	
3	Shalmalyadi Varga	RN
4	Nikumbhadi Varga	AM
5	Satpushpadi Varga	PN
6	Amlakyadi Varga	NA

3. CLASSIFICATION

Ayurveda: Sthavar Visha Varga[6] ,Upavisha[7].

Modern[8]: Irritant organic vegetative poison

Special Categorization[9]

Caraka: Virecana, Sat Sodhana Vrksa, Ksheeratraya.

Sushruta: Syamadi, Adhobhagahara

Vagbhata: Nikumbhadi (Virecana)

4. API

API has described synonyms, morphology, Rasa Panchakas, dose etc. It describes Rasa as Katu, Guna as Laghu, Teekshna, Snigdha. Veerya as usna, Katu Vipaka.

5. SYNONYMS

Si No	Synonyms	K N	SN	A R	Sa N	M N	D N	B N	R N	SAUR SAM	SABDA
1	Apatra									+	
2	Asipatra					+					
3	Bahudugdha		+								
4	Bahudugdhika										+
5	Bahukshira		+								
6	Bahusakha								+		
7	Bahustrava	+	+								
8	Bhadra								+		
9	Dandavrikshaka								+		
10	Dugdhavajri										
11	Gandira	+	+				+		+		
12	Granthila										
13	Guda	+				+	+				
14	Gundakhya								+		
15	Kshirakandaka								+		
16	Kshiri								+		
17	Kulisadruma	+									
18	Mahadruma									+	
19	Mahavriksha	+	+				+		+	+	
20	Netraari								+		
21	Nihudiggo						+				
22	Ninstrapatrika		+				+		+		
23	Ninstrishapatraka	+									
24	Sakhakantaka								+		
25	Samantadugdha		+		+	+	+	+	+		

26	Sehunda		+			+		+	+		
27	Sinhatunda							+			
28	Sinhunda		+		+		+	+			
29	Snuga-Gundra										
30	Snuhi	+				+			+		
31	Snuka	+				+			+		
32	Snusha										+
33	Sudha	+						+	+		
34	Tridhara								+		
35	Vataari								+		
36	Vajradruha										
37	Vajradruma							+			
38	Vajrakantaka	+					+		+		
39	Vajratunda	+							+		
40	Vajravriksha										
41	Vajri	+				+					
42	Vishani									+	
43	Vishanikaha		+								
44	Vyaghranakha								+		
45	Yamalakantaka									+	

6. INTERPRETATION OF SYNONYMS

Based on Morphology

Guda- Its stem is circular in appearance[9].

Samantadugdha -All parts of the plant bear latex[9].

Sihunda, Sehunda- It's stem or branch tips will give the appearance of claw of lion as they bear thorns[9].

Snuka[10], Snuhi[11] -It secretes milky white latex. Latex used as drastic purgative.

Asipatra- Leaves blade shaped like blade of a sword[12].

Kshiri- The plant contains profuse latex almost in all parts[10].

Granthila- Stem is having nodular structure[13]

Dandavrikshaka- Stem is stick-like [10,14]

BahuKshira- The plant oozes profuse latex from almost all parts[15,16].

Vyaghranakha- Plant with sharp twin spines, like that of nail of a tiger[10]

Svajihvapatra- Leaves are having shape like that of a tongue of a dog[13].

Based on Pharmacological actions

Vajra[15], Vajradu[17], and Vajravriksha15 -It acts as drastic purgative. Compared to diamond i.e., as diamond cuts through even the hardest material similarly this plant can eliminate the most difficult Dosha from the body.

Gandira- Latex is used for dissolving enlarged glands[15].

Guda- Latex protects the body[15].

Mahavriksha- Latex is used for cutting. The plant also attains big height[11].

Vajradruma- Latex is used for cutting[9].

Sudha- The plant contains profuse latex almost in all parts. Latex acts as ambrosia[13].

Others

Netrari- Plant causes injury to eye[10].

7. VERNACULAR NAMES[8,18.]

English – Common milk hedge, Holy Milk Hedge, Dog's Tongue.

Hindi - Sehund

Gujarati – Thor, Kantalo Thor

Sanskrit - Snuhi

Arabic - Jakum

Bengali- Manasa sija

Kannada – Male kalli

Malayalam - Illakalli

Marathi - Thor, Nevagunda

Punjabi - Thor

Tamil - Ilakalli

8. PROPERTIES OF SNUHI

Rasa of Snuhi

Rasa	RN	MN	KN	DN	PN	NR	BN	NA	API
Katu	-	+	+	-	-	+	+	+	+
Tikta	-		+	+	-	-	-	+	+

Guna of Snuhi

Sl.No	Nighantu	Guna
1	MN	-
2	DN	Guru
3	AR	-
4	MN	Teekshana, Guru
5	KN	Teekshana, Guru Kshira- Snigdha, Laghu.
6	BN	Teekshana, Guru Kshira- Snigdha, Laghu
7	RN	-
8	SN	Teekshana, Guru Kshira- Snigdha, Laghu Patra- Teekshna, Sara, Guru
9	PN	-

Veerya of Snuhi

Sl.No	Nighantu	Veeryam
1	Madanadi Nighantu	Ushna
2	DN	Ushna
3	AR	-
4	MN	-
5	KN	Ushna Kshira- Ushna
6	BN	Kshira- Ushna
7	RN	Ushna
8	SN	Kshira- Ushna Patra-Ushna
9	PN	-

Vipakam of Snuhi

Sl.No	Nighantu	Vipakam
1	Madanadi Nighantu	-
2	DN	Katu
3	AR	-
4	MN	Katu
5	KN	Katu
6	BN	Katu
7	RN	Katu
8	SN	Katu
9	PN	-

Doshagnatha of Snuhi

Sl.No	Nighantu	Doshagnatha
1	Madanadi Nighantu	KV hara
2	DN	KV hara
3	AR	-
4	MN	KV hara
5	KN	KV hara
6	BN	PV hara
7	RN	PV hara Kshira-Vata hara
8	SN	KV hara Patra- KV hara
9	PN	KV hara

9. USEFUL PARTS[8]

Latex, stem, leaf, and root

10.MATRA[8]

Ksira (Latex) – 125 to 250mg

Leaf juice – 2 to 5 drops

Root powder – half to 1gm.

11. AMAYIKA PRAYOGA (THERAPEUTIC USES)[9]

1 Arsas – Latex of Snuhi mixed with Haridra, Kosataki, Saindhava lavana and Gomutra is applied on Arsas.

2 Virecanartha – Trivrit impregnated with latex of Snuhi taken with honey and ghee will act as very good purgative.

12. THERAPEUTIC INDICATIONS

Sl. No	Name of Samhita and Nighantu	Properties and uses
1	Charaka Samhita	Panduhar, Udarahar, Gulmahar, Kushthaghna, Dushivishahar, Shavathuhar, Madhumahahar
2	Susrutha Samhita	Romapaharan, Dushtavrana, Arshahar, Bhaganarhar, Kushthaghna, Udarahar
3	Yogaratnakar	Rechan, Shulaghna, Asthilikahar, Adhamanahar, Gulmahar, Sophahar, Udarahar, Plihahar, Kushthaghna, Unmadahar,,Ashmarighna, Panduhar
4	Bhavaprakash Nighantu	Sulahar, Asthilikahar, Adhamanahar, Kaphahar, Gulmahar, Udarahar, Unmadahar, Mehahar, Kushthaghna, Arshahar, Sothahar, Medohar, Panduhar, Ashmarighna, Vranasothahar, Jwarahar, Vishahar, Gulmahar, Dirgharogahar.
5	Dhanvantari Nighantu	Dushtavranahar, Ashmarihar, Vishsahar, Adhamanahar, Gulmahar, Udarahar.
6	Raja Nighantu	Pittahar, Dahahar, Kushthahar, Vatahar, Pramehahar, Vishaghna, Adhamanahar, Gulmahar, Udarahar.

13. OUSHADHA YOGA (FORMULATIONS)[8]

1 Snuhiksira Ghritha

2 Snuhyadi Varti

3 Vajra ksara

4 Maha Marichadya Taila

5 Jalodorari Rasa

14. BOTANICAL IDENTITY[8]

Botanical name : *Euphorbia neriifolia Linn*

Family: Eupborbiaceae

Botanical source of various types of Snuhi as noted in different Dravyaguna texts

Type of Snuhi Botanical Source Family References

Patra Snuhi Euphorbia neriifolia Linn. Euphorbiaceae K C Chunekar (2010),

K. Nishteswar and K. Hemadri (2013)

Tridhara Snuhi Euphorbia antiquorum Linn. Euphorbiaceae K C Chunekar (2010)

Kanda Snuhi Euphorbia tirucalli Linn. Euphorbiaceae K. Nishteswar and K. Hemadri (2013),

Vaidya Bapalal (2013)

Sehunda (Thuhar) Euphorbia nivulia Buch.-Ham

Euphorbiaceae Vaidya Bapalal (2013)

Saptala Euphorbia dracunculoides Lam.

Euphorbia pilosa Linn.

Euphorbiaceae K C Chunekar (2010)

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Euphorbiaceae Vaidya Bapalal (2013)

Saptala Euphorbia dracunculoides Lam.

Euphorbia pilosa Linn.

Euphorbiaceae K C Chunekar (2010)

15. SYSTEMIC POSITION[8,18.]

Kingdom – Plantae

Subkingdom- Angiosperm.

Subclass – Monochlamydae

Order – Unisexuales

Family – Eupborbiaceae

Genus – Euphorbia

Species – neriifolia

16. FAMILY CHARACTERS[19.]

Prostrate or diffuse herbs or armed shrubs to trees, with milky latex. Leaves simple, opposite, alternate or whorled; stipules rarely modified into spines. Flowers monoecious, aggregated in a special type of inflorescence cyathia. Cyathia solitary or aggregated in terminal and /or axillary cyme, involucres campanulate, copular or turbinate; bracts often 5, glands 1-5: bracteoles setaceous; perianth scaly or 0.Male: florets 1 to infinity. filaments joined below to the pedicel; anthers usually globose.Female: floret single, raised above on a stalk, pendent or erect: ovary –locular: ovule 1 per locule: styles 3,2 –fid.Capsule of 2 to 3 bivalved cocci. Seeds globose or angular.

17. BOTANICAL DESCRIPTION

Habitat– Snuhi is mainly growing in South Indian states. In most of the places Snuhi is cultivated as a hedge plant.

The plant is a large fleshy, glabrous, branched shrub or a small tree,1.8-4.5 m high with pairs of stipular spines; leaves fleshy, deciduous, obovate, spathulate, shortly acute nerve visible only in transmitted light, erect branches ¾ in diameter jointed cylindric or obscurely 5 angled with sharp stipular thorns arising from thick subconfluent tubercles in 5 irregular rows like cactus. The branches are 2 to 4 m heigh, the trunk and older branches are greyish and

cylindrical; medium branches are being slightly twisted,stout,fleshy,and 4 or 5 angled or winged. Younger ones are usually 3 winged, wings labulate with a pair of stout, sharp,2 to 4 mm long spines rising from the thickened bases at each leaf of petioles-scar [21]. Leaves are succulent, deciduous,6-12 inch long, terminal on the branches, waved narrowed into a very short petiole. The leaves are arise from the sides of wings towards the end of branches, fleshy, oblong,obviate, 5 to 15 cm long or in young plants somewhat longer, painted or blunt at the tip[21]. This plant is leafless for most part of the year except during monsoon when fresh leaves appear. Inflorescence is cyathium type, means one female and several male flowers are found on a same bunch. Female flowers consist of a trichambered ovary, which usually elongates in fruit. Bracts linear. Each chamber contains an ovum. Involucres are yellowish 3-nate, the lateral one of the cymes shortly thickelly pedicelled, central sessile, lobes large erect, roundish, cordate, fimbriate. glands transversely oblong; bracteoles most abundant, fimbriate. Fruits are 3 chambered, tricoccus, but so deeply divided that it has the appearance of 3 radiating slender follicles.

Stem: Green and cylindrical stem and large branches also being round and terete, spiral ridge portion, Sharp stipular thorns, with hollow space in centre containing white reticulate mass. The younger branchlets are somewhat verticillate, with two or more whorls without auriculations, fleshy, cactus like, swirled, light green, glabrous, 8-30mm thick, often leafless, and spine shield in 5 distinct rows on more or less distinct angles (not winged) which are visibile for a long time[21]. The trunk and older branches are being greyishand cylinder. Bunches of succulent thick leaves occurs on the branches [20].The leaves arise from the sides of wings towards the end of the branches.

Leaves: The fresh young leaves are simple, dark green in colour having leathery texture. The surface is glabrous with reticulate venation. The average leaf size is 8 to 14 cm length and 4 to 8 cm breadth and 1.3mm thickness with pointed and acute tip[21].

Stipular thorns: The spines are short, about 4 to 12 mm long arising from the ribs, greyish brown to black in colour, sharp, persistent, from low conical truncate distant, spirally arranged tubercles 2 to 5 mm height and 2 to 3 cm apart [21,22].

Flowers (terminal, corymbose)

Both male and female flowers are found in the same bunches of the herb. Flowers when viewed as a whole, looks like a single flower. 3 to 7 flowered cymes or panicles appearing laterally in the axils of the upper leaves on short, rigid and forked peduncles, flattened-globose, 1.5 to 2 mm x 4 to 5 mm, reddish, prominent in groups of tree, the central one is subsessile, the lateral ones with a peduncle of 6 to 7mm, corolla absent but the involucres has two nearly round to ovate, bright red bracts 3 to 7mm long. Inflorescence or the arrangement of flowers in a bunch [21].It is of cyathium type. Flowers and fruits occur during the month of December to May 4[22].

Fruits: Capsules are three chambered or 3 lobed, smooth, stigmas slightly dilated and minutely toothed with 10 to 12 mm in diameter [21].

Latex: Latex is a milky sap like fluid found in cells or vessels and usually executed after tissue injuries that make up the lactiferous system [22].

18. DISTRIBUTION

Euphorbia neriifolia grows widely around the dry, rocky and hilly areas of north, central and south India mostly in Deccan Peninsula and Orissa. It is indigenous plant of South Asia, but now locally cultivated and naturalizing in Srilanka, India, Burma, Bangladesh, Thailand .It is often cultivated for hedges in villages throughout India[23].

19. CHEMICAL CONSTITUENTS[24]:

Latex – Euphol, nerifoliol, neriifolene, taraxerol, flavonoids, steroidal saponins, sugars, tannins, alkaloids, Beta – amyroin.

20. PROPAGATION AND CULTIVATION

Cultivation

Plant needs full exposure to sun but can also succeed to grow in light shade. They prefer rocky areas for the growth. They need well drained soil. Grows well in dry place and rocky area in villages all over India [23]. It needs no maintenance. It is a moderately fast grower, and will quickly become large landscape areas in just 3 to 5 yrs. Water regularly during the active growing season (at least weekly) from March to September but no water should ever be allowed to stand around the roots. Keep almost completely dry in winter.

21. COLLECTION

Time of Collection of Latex

According to Charak Samhita Snuhikshir has to be collected from the stem of the plant which has completed 2-3 years of existence and preferably should be tapped at the end of ShishirRitu (late winter) which corresponds to mid of month of January. Practically, it has been noted that maximum amount of Snuhikshir can be collected in the dawn. In order to comprehend this, it becomes mandatory to look into literature as regards plant physiology that is the concept of turgor pressure in plant cells and the time of collection of latex. Turgor Pressure is a force per unit area exerted outward on a plant cell wall by the water contained in the cell vacuole. In terms of plant water potential, turgor pressure is usually expressed as the pressure component (Ψp). This force gives the plant rigidity, and keeps it erect[25]. While studying the turgor pressure inside the laticiferous cells in Hevea, it was noted by Buttery & Boatman that, in latex bearing plants, the turgor pressure inside the laticiferous cells is directly responsible for latex flow at tapping. The turgor pressure of latex vessel is maximum during the dawn, falls during the day as a result of withdrawal of water under transpiration stress and rebuilt at night. Based on Paardekooper & Sookmark, 1969 studies, the poor latex yield when the trees are tapped much after sunrise is due to such diurnal variations in turgor pressure, which in turn could be due to the changes in water vapour deficit in the air. Thus, immediately on tapping, the pressure in the tip of vessels is reduced to atmosphere level and this expels out of the lacticifers. Gomez in 1983, states that the serving of the latex vessels with the consequent loss of turgor pressure disturbs the original osmotic equilibrium throughout the outflow area which creates a suction pressure resulting in the influx of water from the neighbouring cells into latex. At the end of the flow, the turgor pressure in the vessels is gradually restored and regeneration of latex between tapping takes place. As stated earlier, Snuhi *(Euphorbia neriifolia Linn.*) and Rubber plant *(Hevea brasiliensis*) belong to the same family Euphorbiaceae, same properties are seen being exhibited by Snuhi and hence, latex of Snuhi should be collected before dawn as recommended in CharakSamhita. Scientific way of Snuhikshir Tapping Additionally, it is important to learn the scientific way of tapping of Snuhikshir, to achieve minimum injury to the plant; for that we need to learn the concept of Tapping. Tapping means to penetrate, open up, and reach into, for the purpose of using something or drawing something off. Accordingly, Tapping is a process by which the latex is collected from Snuhi. Exploration of botanical aspects ofticifers reveals that laticifers are specialized cell or a row of such cells that secrete the latex. Laticifers are further divided

into two types Non-Articulate & Articulate. Out of these two non-articulate cells are derived from enlargement of a single cell which further elongates to form long latex tubes which are again divided into two parts viz., Unbranched Non-articulate Unbranched Lacticifer& Branched Non Articulate Branched Laticifers which are found in Euphorbia species. Non-Articulate Latex Cell of Euphorbia Species As it is very much evident, a longitudinal cut section on the Phylloclade of Snuhi not only will provides us with a larger surface area but also will allow us convenient collection of Kshir. Moreover, longitudinal cut serves an important purpose of injuring only single laticifers cells, thereby causing minimum injury to the plant during collection[26].

Precautions while collecting Snuhikshir.

After considering the scientific way of collection of Snuhikshir as per plant botany, there is a need to understand even the precautions while collecting the same. Accordingly, reports suggest that latex produces inflammation and vesication if applied locally. It has also been reported that if latex is instilled in eyes it produces severe conjunctivitis and even eyesight is lost[27]. Hence, people who work with Euphorbia species should wear gloves & protective glasses while handling the plant.

Preservation of Latex

Preservation of Snuhikshir is of utmost importance as it is practically seen that the latex coagulates on exposure to air. Hence, Snuhiksshir preferably needs to be collected in a sterile air tight container and therefore, it is advised that fresh latex needs to be collected every time before its use as coagulated latex renders it useless for clinical utility. However few experts transfer the collected latex in the jar containing Diethyl ether (CH3- 0-CH2CH3), ether being an inert substance with good solvent properties for organic molecules. Moreover, ethers are used as a General anesthetic agent, refrigerant as produces cooling on evaporation and used as a solvent for oils, fats, resins etc. and is also highly inflammable[25]. It has been observed that, ether prevents coagulation of latex and hence, latex can be preserved for some days for its clinical utility.

22. Snuhi ksira Shodhana (Purification method)

Toxic part - Latex

Dosage:

Latex – a possible fatal dose is 25-30ml and fatal period is about 3 days[27].

Snuhi ksira Shodhana (Purifiction method) [28,29.]

3 pala (96ml) of Snuhi ksira is taken along with 2 tola (24ml) of filtered cinca patra swarasa in a clean wide mouthed container. The vessel is placed under sun and dried. When the liquid part dries up, the dry powder obtained is stored in a suitable airtight container as Suddha suska snuhi ksira for further therapeutic use.

4 Toxic symptoms[7]:

External Application:

• When applied to the skin, produces vesication.

• When dropped into the eyes, it produces inflammation involving eyesight.

Internal Administration:

• It's causing irritants, vomiting, diarrhoea.

• Convulsions and coma.

• It is used for procuring criminal abortion.

Treatment[7]:

Wash contact part with running water.

Symptomatic treatment –

On ingestion: Gastric lavage with normal saline, Activated charcoal.

On contact: Skin - Topical corticosteroids

Eye- Antibiotic eye drops, Tears substitute, IOP (Intra ocular pressure) lowering medications.

Post Mortem Appearance[7]- Signs of inflammation of contact part, gangrenous patches in the stomach and rotten spleen.

Medico legal importance[7]- Commonly accidental poisoning, Homicidal and suicidal purposes are very rare and used for procuring criminal abortions.

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