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REVIEW OF SNUHI (EUPHORBIA NERIIFOLIA) FOR ITS PHARMACOLOGICAL PROPERTIES

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ABSTRACT

Euphorbia neriifolia (Linn) is an important medicinal plant. The medicinal uses of *Snuhi* are of utmost importance. In the *Ayurvedic* literature, it is one of the most commonly used herbs. A review of research work done regarding ancient and *Ayurvedic* properties of *Snuhi* i.e. *Euphorbia neriifolia* is mentioned here .The study shows that *Snuhi* possesses various pharmacological properties. According to *Ayurveda, Tikshna Virechaka, Sanghathar, Kushthagna, Vranahar, Vishaghna, Shavathuhar, Shulaghna, Bhagandarhar, Shofhar, Bhrantihar, Kaphahar.* Due to its *Tikshna Virechaka* property it is mainly use in *Kushtha, Udar, Shoth, Pandu, Gulma, Dushivisha* chikitsa. According to modern science it possesses Immunomodulatory activity, Wound healing activity, Anti Bacterial, Hepatoprotective activity, Analgesic and Anti-Inflammatory activity, Anti oxidant activity, Diuretic activity, Anti Diabetic activity, Anti Hyperlipidemic activity, Anti Psychotic activity, Anti Carcinogenic activity.

KEY WORDS: *Snuhi, Euphorbia neriifolia*, Pharmacological actions.

INTRODUCTION

Euphorbia neriifolia (Linn), family *Euphorbiacea*, commonly known as *Snuhi* is an important medicinal plant. Almost all the parts of *Snuhi* are of medicinal importance and used traditionally for the treatment of various ailments. In the *Ayurvedic* literature it is one of the most commonly used herb. *Charka and Sushruta* both highlighted its importance as *Tikshna Virechaka Dravya. Charak* included it in *Virechana Dravya* and give its tewenty *Virechana* formulatins in *Sudha kalpa Adhyaya* of *Kalpasthana.* Acharya *Sushruta* maintained its use in preaparation of *Kshara* which is mostly use in *Arsha, Kushtha, Bhagandara* etc. According to *Acharya Chakrapani Snuhi Kshir was used in the preaparation of kshar sutra which is one of the best remedy for* Bhagandara.

Properties and Uses of *Snuhi* Mentioned In *Samhita* And *Nighantus:*

Sr.No.	Name Of *Samhita* and *Nighantu*	Properties and Uses
1.	***Charak Samhita***	*Panduhar, Udarhar, Gulmahar, Kushthaghna, Dushivishahar, Shavathuhar, Madhumehahar* [1]
2.	***Sushruta Samhita***	*Romapaharan, Dushtavrana, Arshahar, Bhagandarhar, Kushthaghna, Udarhhar* [2]
3.	***Yogratanakar***	*Rechan, Shulaghana, Ashthilikahar, Adhamanhar, Gulmahar, Shofhar, Udarhar, Plihahar, Kushthaghna, Unmadhar, Ashmarighna, Panduhar* [3]
4.	***Bhavprakash Nighantu***	*Shulhar, Ashthilikahar, Adhamanhar, Kaphahar, Gulmahar, Udarhar, Unmadhar, Mehahar, Kushthaghna, Arshahar, Shothhar, Medohar, Panduhar, Ashamarighna, Vranashothahar, Jwarhar, Vishahar, Gulmahar, Dirgharogahar* [4]
5.	***Dhanwantari Nighantu***	*Dushtavranahar, Ashamarihar, Vishahar, Adhamanhar, Gulmahar, Udarhar* [5]
6.	***Raja Nighantu***	*Pittahar, Dahahar, Kushathahar, Vatahar, Pramehahar, Vishaghana, Adhamanhar, Gulmahar, Udarhar* [6]

Vernacular Names[7]

English : Holy Milk Hedge. Dog's Tongue

Hindi : *Sehund*

Sanskrit : *Snuhi*

Marathi : *Tridhara Nivdunga*

Latin : *Euphorbia neriifolia*

Family : *Euphorbiaceae*

Botanical Description

A large branched shrub or small tree 1.8-4.5m, with the pairs of stipular spines on tubercles or swellings of the branchlets. These tubercles more or less obtusely 5-gonus in section. Leaves obviate, very similar to those of *E. nivulia*. Involucres yellowish, 3-7 in chime, usually 3 with very short fleshy peduncle in the bract axials, a 2 sexual involucres, the opposite bracts of which in their turn bear each peduncle and are 3-lobed with central lobe toothed. Style 3-fid, stigmas slightly dilated and minutely toothed.[7]

Pharmacological actions

- **Immunomodulatory activity**

Kalpesh Gaur et al determined the Immunomodulatory activity of 70% v/v hydro-alcoholic extract of dried leaves of *Euphorbia neriifolia* by oral administration at dose of 400mg/kg/day of body weight to healthy albino rats. The determination of immunomodulatory activity was done by testing the survival rate of rats against abdominal sepsis caused by E. coli. Also determination of hematological parameters and phygocytic index was determined by carbon clearance method. The humoral immune responses were determined by haemaglutination antibody titre method and cellular immune responses were determined by footpad swelling method. The hydro-alcoholic extract of *E. neriifolia* possessing significant protection against E.coli induced abdominal sepsis, significant increase in total leucocyte count, differential leucocyte count and phygocytic index were determined. These results indicate immunomodulatory activity of hydro-alcoholic extract of dried leaves of *E. neriifolia*.[8, 9]

- **Wound healing activity**

A.M.Rasik et al determined wound healing activity of aqueous extract of *E. neriifolia*. Surgically produced cutaneous wound when treated with tropical application of 0.5% and 1% sterile aqueous solution of the aqueous extract of the latex of *E. neriifolia* showed facilitated healing process as evidenced by increase in tensile strength, DNA content, epithelization and angiogenesis. These indicates wound healing property of *E. neriifolia*.[8, 10]

- **Anti-Bacterial activity**

Kumar Swami et al determined the phytochemical and anti microbial studies of leaf extract of *E. neriifolia*. The phytochemical analysis of leaf extracts of medicinal plant *E. neriifolia* and their antibacterial activities against bacterial isolates *Staphylococcus aureus, Klebsllia*

pneumonia, E. coli, Proteus vulgaris, Pseudomonas fluroscens were investigated. The phytochemical analysis revealed the presence of flavenoids, phlobatannins, saponin, tannins, cadenoids, phenol, terpenoids.

Maximum activity observed in choloroform extract against K. pneumonia (5mm). The water and ethyl acetate extract exhibited very less activity. This research support the local use of the leaf of plant *E. neriifolia* for wound healing property and other forms of bacterial infections.[11]

- **Hepatoprotective activity**

Papiya Bigoniya et al (2010) investigated the hepatoprotective activity of saponin fraction isolated from leaf of *E. neriifolia* on CCl_4 induced hepatotaxicity of rats. CCl_4 (5mg/kg ip) is a hepatotoxic agent which induces peroxidative degeneration of membrane lipids causing hypo perfusion of membrane. They found that SGPT, SGOT, ALP elevates in blood and hepatic glutathione and SOD decreases. This hepatoprotection activity was campared with silymerin a well known standars hepatoprotectants and they found that *E. neriifolia* shows good hepatoprotective property.[8, 12]

- **Anti inflammatory and Analgesic activity**

Kalpesh Gaur had observed the anti inflammatory and analgesic activity of 70% v/v hydroalcoholic extract of dried leaves of *E. neriifolia* by oral administration at dose of 400mg/kg,day of body weight to healthy albino rats. The hydroalcoholic extract was also evaluated for analgesic action using Eddy's hot plate method and tail-flick method in albino rats. It showed significant reduction in the carrageenan induced paw edema in rats and analgesic activity evidenced by increase in reaction time by Eddy's hot plate method and tail-flick method in albino rats.[8, 13]

Anti inflammatory activity of latex of petroleum ether fraction of *E. neriifolia* was also investigated by Papaya Bigonia (2010).[8, 14]

- **Antioxidant activity**

Pracheta et al (2010) investigated the in vitro free radical scavenging and antioxidant activity of *E. neriifolia* .The antioxidant activity of ethanolic extract of *E. neriifolia* was evaluated by various antioxidant assays such as TAC, FRAP, FTC, TBA and non specific activity. All these anti oxidant activities were compared with standard antioxidants. Phytochemical

screening and the total phenolics, flavonols and proanthrocinidin content were also determined. A positive correlation between the antioxidant activities and physiochemical assays was observed and the highest scavenging activity of extract was noted at concentration of 1mg/ml. Result obtained indicate antioxidant property of ethanolic extract of *E. neriifolia. [8, 15]* Antioxidant property of *E. neriifolia* was also studied by P. Bigonia and A. C. Rana et al (2010).[8, 16]

- **Diuretic activity**

Papiya Bigonia and A. C. Rana investigated diuretic activity of *E. neriifolia*. Wister albino rats of both sexes are taken by them for these tests. Animals were deprived of food and water for 16 hours. All the rats received the priming dose of normal saline 25ml/kg orally, immediately after administration of vehicle, different doses of extract of *E. neriifolia* and standard frusemide (5mg/kg). The urine was collected in measuring cylinder upto 5h after drug administration. Concentration of Na+ and K+ in urine was measured by flame photometer. *E. neriifolia* extract considerably increases urine volume as an effective hypernatraemic and hypercholaemic diuretic.[8, 17]

Anti-diabetic and anti-hyperlipidemic activity

Mansuri MI, Patel VM determined the anti-diabetic and anti-hyperlipidemic activity of ethanolic extract of leaves of *E. neriifolia*. They used high fat streptozotocin (HFD-STZ) induced type-2 diabetic rats for their study. The purpose of their study is to examine the effect of repeated oral administration of ethanolic extract of *E. neriifolia* at dose of 200 and 400 mg/kg on fasting glucose levels and lipid metabolism in streptozotocin induced type-2 diabetic rats. After 21 days of oral administration of 400mg/kg of *E. neriifolia* etanolic extract produced decrease on fasting blood glucose, triglyceride, cholesterol, LDL levels in HFD-STZ induced type-2 diabetic rats, on the other hand there was significant increase in HDL levels. It indicates that the ethanolic extract exhibits anti-diabetic potential along with potent lipid lowering effect after repeated oral administration.[18]

- **Antipsychotic activity**

Bigoniya P, Rana AC (2005) investigated psychopharmacological profile of hydroalcoholic extracts of *E. neriifolia* leaves in mice and rats. They suggested that the leaf extract significantly reduces apomorphine induced stereotypyin mice at all doses (100, 200, 400 mg/kg body weight). Mice and rats were devoid of catalepsic effect thereby suggesting

specific dopaminergic receptor modulatining activity. The extract 400mg/kg potentiated pentobarbitone induced hypnosis. It showed protection against maximal electroshock induced convulsions at 400mg/kg. It had antipsychotic action at 400mg/kg by increasing the percentage of time spent in open arm in elevated plus maze. It increases transfer latency at 200-400mg/kg and also in combination with scopolamine. This indicates antipsychotic, anti-anxiety, anti-convulsant activity of *E. neriifolia* leaf extract in mice and rats.[8, 19]

- **Anti-carcinogenic activity in renal carcinogenesis**

Veena Sharma and Pracheta investigated anti-carcinogenic effect of *E. neriifolia* leaves and isolated flavanoid against N-Nitrosodietyleamine induced renal carcinogenesisin mice. Experimental mice were pretreated with 150-400mg/kg body weight of EN, 0.5% and 1% mg/kg body weight of butylated hydrolanisole (BHA) as a standard anti-oxidant and 50mg/kg body weight of ENF for 21 days prior to the administration of a single dose of 50mg/kg body weight of DENA. Levels of renal markers (urea and creatinine) xenobiotic metabolic enzymes (cyt p450 and cyt 65), lipid peroxidation (LPo), antioxidants (SOD, CAT, GST and GSH) and other biochemical parameters – AST, ALT, ALP, TP,TC were measured to determine renal carcinogenesis caused by DENA. Pretreatment with EN and ENF counteracted DENA induced oxidative stress and exerted its protective effect by restoring the levels of antioxidants, biochemical parameters, renal markers and xenobiotic enzymes in renal tissues. The result indicates anti-carcinogenic potential of the hydroethanolic extract of *E. neriifolia* and ENF against DENA induced renal carcinogenesis.[20]

These properties can be compared as follows

Sr.No.	Ayurvedic Properties	Modern Properties
1.	*Dirgharoghar*	Immunomodulatory activity
2.	*Vranoropan*	Wound healing activity
3.	*Kushthahar, Dushtavranahar*	Anti-bacterial activity
4.	*Plihaghna*	Hepatoprotective activity
5.	*Shofahar, Shothahar*	Anti-inflammatory and analgesic activity
6.	*Panduhar*	Anti-oxidant Activity
7.	*Udarhar*	Diuretic Activity
8.	*Pramehahar*	Anti-diabetic Activity
9.	*Medohar*	Anti hyperlipidemic Activity
10.	*Unmadahar*	*Antipsychotic activity*
11.	*Asthilikahar*	Anti-carcinogenic activity in renal carcinogenesis

DISCUSSION

The *Ayurvedic* references shows that the plant *Snuhi* possesses, *Vednahar, Kapha-Vatahar, Dahashamak, Vishaghna, Dirghroghar, Kushthaghna, Vranaropan, Dushtavranahar, Plihaghana, Shothahar, Shofahar, Panduhar, Udarhar, Pramehahar, Medohar, Unmadhar, Ashthilikahar properties.* Modern studies states the properties of *Snuhi* as Immunomodulatory activity, Wound healing activity, Anti Bacterial, Hepatoprotective activity, Anti-inflammatory and analgesic activity, Anti oxidant activity, Diuretic activity, Anti Diabetic activity, Anti Hyperlipidemic activity, Anti Psychotic, Anti Carcinogenic

CONCLUSION

The literary study of *Snuhi* from Ayurvedic texts and modern researches concludes that *Snuhi* i.e. Euphorbia neriifolia has following properties according to *Ayurverda, Vednahar, Kapha-Vatahar, Dahashamak, Vishaghna, Dirghroghar, Kushthaghna, Vranaropan, Dushtavranahar, Plihaghana, Shothahar, Shofahar, Panduhar, Udarhar, Pramehahar, Medohar, Unmadhar, Ashthilikahar*, and according to modern are Immunomodulatory activity, Wound healing activity, Anti Bacterial, Hepatoprotective activity, Anti-inflammatory and analgesic activity, Anti oxidant activity, Diuretic activity, Anti Diabetic activity, Anti Hyperlipidemic activity, Anti Psychotic, Anti Carcinogenic.

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