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A REVIEW ON RASAYANA KARMA OF JEEVANTI: AN AYURVEDIC HERB

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ABSTRACT

Every man wants to be alive long and healthy life. This is often possible by promoting rejuvenation, healing, and regeneration of living tissue within the body and for this required the Rasayana therapy. Rasayana may be a distinctive branch of Ayurveda which mainly deals with the conservation and promotion of fitness and longivity by revitalizing the metabolism and enhancing resistance against diseases. Ayurveda mention herbs that are belived to detoxify the body and mind, prevent degeneration and reverse the aging process and one among them is Jeevanti (Leptadenia reticulata W and A) belongs to Asclepiadaceae. It is believe to be a rasayana and included among the Ten drugs constituting the Jeevaniya gana or Vitalising group. This plant has been found to exhibit diverse pharmacological activities like anti-oxidant, anti-inflammatory, Hepato-protective, Cardio-protective, immunomodulatory, Antidepressant, anti-microbial and lactogenic activites. This Review Draw the awareness towards the rasayana and other pharmacological activity of jeevanti.

KEYWORD: Jeevanti (Leptadenia reticulata W and A), Rasayana, Pharmacological activities.

INTRODUCTION

The rasayana therapy enhance the quilities of rasa, enriches it with nutrients so one can attains longivity, memory intellegence, freedom from disorder, youthfullness, excellence of luster, complexion and voice. Taking rasayana is useful to extend the immunity of the person to stay him faraway from disease and also reverse the disease process and prevents the re-

occurrence.[1] Today's health conscious public is now realizing that herbs, in conjunction with a appropriate diet and exercise programme, can help them to realize good health.[2] like Jeevanti (Leptadenia reticulata W and A) belongs to family Asclepiadaceae. Aacharya Charaka mentioned this drug in Jeevaniya (vitaliser), Vayasthapana (anti-aging) mahakashaya.[3] It occurs Madhura rasa, Laghu, snigdha, sheeta guna, Sheeta virya and Madhur vipaka having Tridoshaghna, rasayana (rejuvenating), Balya (Bulk promoting) chakchushya, Grahi, Raktapittahara, Vatahara, and Kapha-veerya vardhak properties.[4] It's significant rasayana because it nourishes the sapta dhatus thanks to its madhura rasa, sheeta virya and Madhura vipaka. Jeevanti has been found to exhibit diverse pharmacological activites like anti-oxidant, anti-inflammatory, Hepato-protective, Cardio-protective, immunomodulatory, antidepressant, anti-microbial and lactogenic activites.

Jeevanti (Leptadenia reticulata W and A)

Latin name – Leptadenia reticulata W and A

Family – Asclepiadaceae

Synonyms of Jeevanti.[7,8,9]

Synonyms	Dhanavantari Nighantu	Raj-Nighantu	Bhavprakash-Nighantu	Kaiyyadev Nighantu	Madanpal Nighantu
Jeevanti	+	+	+	+	+
Madhustrava			+	+	+
Payaswini			+		
Shak-Shrestha	+	+		+	+
Mangalyanamdheya	+		+		
Yashasya, Yashaskari	+	+		+	+
Jeevaniya	+	+	+		+
Devaprushtha				+	
Shrugaritika				+	

Vernacular names

Language Vernacular Names (Language)

- Sanskrit Jeevanti, Jivniya, Jivani.
- Hindi Dori.
- Bengali Bhadjivai.
- Gujrati Methidodi, Dodi saka, Dori.
- Marathi Haranvel, Hiranvel.
- Kannada Hiriyahalle.
- Tamil Palaikkodi.

- Telugu Kalasa.
- English Jiwanti or Jeevanti.

Taxonomy

- Kingdom Viridiplantae.
- Phylum Streptophyta.
- Class Magnoliopsida.
- Order Gentianales.
- Family Apocynaceae.
- Sub-family Asclepiadaceae.
- Genus Leptadenia.
- Species Leptadenia reticulata (Retz.) W & A.

MORPHOLOGY

It is branched shrub which features a flower of greenish yellow color. Stems are bent and cylindrical and measures 5-10cm long and 0.5-2.5cm in diameter. The surface of Leptadenia reticulate is ridged, rough, furrowed and wrinkled. Lenticles are vertically elongated and externally it's whitish brown, pale brown internally and splintery. Odor and taste of this plant is deeply cracked, corky and raw sienna in color. Leaves measure 4-7.5cm long and 2-5 cm and are ovate in shape. are ovate, cordate, coriaceous, glabrous above and more or less finely pubescent beneath The petiole is 1-3 cm long above glabrous and below pubescent. Roots of Leptadenia reticulate are 3-10cm long and 1-5 cm wide, white colored, rough with furrows and ridges longitudinally. The species may be a much branched laticiferous twining shrub with yellowish brown, deeply cracked bark. Inflorescence may be a many flowered cyme with yellow flowers. Fruits (follicle) Is horned shaped and slender. Seeds are lanceolate and comose. Flowering occurs in May and June, while fruiting begins in October and continues up to November.

Origin and Distribution

Althogh truth origin of L. reticulata has not been identified thus far, the outline within the oldest scripture of Hinduism indicates that it probably originated in India. In India, it's mainely found in Rajasthan, Punjab, the Himalayan ranges, Khasi Hills, Sikkim, Deccan Plateau, Konkan ranges, Karnataka, and Kerala up to an altitude of 2000m.[6]

Phytochemical Constituents

The therapeutic potential of this herb is because of the presence of diverse bioactive compounds such as Hentriacontanol, a- and b-amyrin, stigmasterol, □-sitosterol and flavonoids-diosmetin, ferulic acid, diosmetin, rutin, hentricontanol, luteolin, a triterpene alcohol simiarenol, apigenin, reticulin, deniculatin, and leptaculatin.

Rasapanchaka of Jeevanti[10]

- Rasa – Madhura.
- Guna – Laghu, Snigdha.
- Virya – Sheeta.
- Vipaka – Madhura.
- Action on Doshas – Tridoshaghna.

Gunkarma[7,8,9]

Gun-Karma	Dhanavantari-Nighantu	Raj-Nighantu	Bhavprakash-Nighantu	Kaiyyadeva Nighantu	Madanpal Nighantu
Rasayani			+	+	+
Sarva-Doshaghna	+		+	+	+
Chakushya	+		+	+	+
Balya		+		+	+
Kapha-virya vivardhani		+			
Grahi				+	+
Snigdha				+	+

Pharmacological action

1. Antioxident Activity

In vitro antioxidant study of methanolic extract of L. reticulata revealed a prominent free radicalscavenging activity against diphenylpicrylhydrazyl (DPPH), hydroxyl, and gas radicals.[11] Antioxidant property of L.reticulata leaf extract was studied in rodents.[12] They found a significantincrease in antioxidant enzymes, superoxide dismutase (SOD), and catalase (CAT), suggesting itsantioxidant potential. Similarly, the DPPH radical scavenging activity study showed the highestantioxidant potential within the easter extract of L. reticulata with IC50 value of 267.13 _g/mLfollowed by the methanolic extract of L. reticulata with IC50 value of 510.15 _g/mL.[11]

2. Hepatoprotective Activity

Nema et al.,[13] investigated the hepatoprotective activity of the stems extracts of L. reticulata onparacetamol-induced hepatic damage in albino rats. The hepatoprotective action of ethanolic extractof L. reticulata was evidenced by a big reduction within the elevated serum glutamic oxaloacetictransaminase, serum glutamic pyruvic transaminase, and alkaline phosphatase level. The ethanolicextract of L. reticulata showed significant hepatoprotective activity, and therefore the efficacy of the extract was almost like comparable to that of quality drug LIV-52.

3. Immunomodulatory Activity

The immunomodulatory potential and antioxidant activities of ethanolicleaf extract of L. reticulata was evaluated by Pravansha et al.[14] The study showed that L. reticulataextract (100 and 200 mg/kg) significantly induced a delayed sort of hypersensitivity reaction, increasedantibody titer values during a dose-dependent manner, increased neutrophil adhesion (%) to nylon fibers, and the rate of phagocytosis. additionally, there was a big increase in hematological profile, reduced glutathione, SOD, and catalase activities. This demonstrates the potentialimmunomodulatory and antioxidant properties of L. reticulata.

4. Anti-pyretic and Anti inflammatory Activity

The aqueous whole plant extract of L.reticulata were experimented a significant antipyretic and anti-inflammatory activity was observed at a dose of 200mg kg^{-1} body wt. and 400mg kg^{1}, respectively in animal models.(Mohanty et al.[15]

5. Lactogenic Activity

Patel.[16] for the primary time drew attention by reporting the usefulness of Leptaden in preventing spoantanoius abortion and later mentioned its lactogenic property. Later, the utilization of Leptaden tablet, a herbal formulation of L. reticulata, for the enhancement of milk yield in humans was practiced.[17] Likewise, clinical assessment showed the lactogenic property of Leptaden within the milk yield of dairy cows.[18,19] A clinical investigation showed that in most cases, Leptaden stimulated lactation in 12 h with easyflow, and lactation continued even after discontinuing the drugs.[20,21] The lactogenic property of L. reticulata and Leptaden tablets was studied on veterinary animals and reported a big galactopoietic response altogether cases . The toxicity assessment of L. reticulata (aqueous extract) showed that rats safely tolerated up to a dose of 3.125 g/kg of Leptaden administered orally for 3 alternate days and three consecutive days.

6. Anti-cancer Activity

Sathiyanarayanan et al.,[22] evaluated the effect of leaf extract of L. reticulata against Dalton, sascites lymphoma (DAL) in Swiss albino mice. They observed that the extract of L. reticulatahad a important inhibitory effect on the proliferation of tumor cell. In vitro study conducted byMohanty et al.,[23] showed that the ester extract of naturally grown L. reticulata was effectivein inhibiting MCF-7, HT-29, and L6 cells with IC50 values of 21 _g/mL, 26 _g/mL, and 22 _g/mL, respectively. The ester extract of micro propagated L. reticulata exhibited cytotoxicity against MCF-7, HT-29, and L6 cells with IC50 values of 20 _g/mL, 30 _g/mL, and 18 _g/mL, respectively.

7. Cardiopratective Activity

Mehotra et al. explored that an outsized large number of medicinal plants are use in Ayurveda, counting on the Hrd Roga (cardiac disorder) or to scale back obesity (Medorog) or inflammation (shoth) are described. The entire these plants are used for the management of CVS disorders as per the precise etiology of the patient consistent with ayurvedic principles.(Mehotra et. Al.2007).[24]

8. Anti-epileptic Activity

Pushpa et al.,[25] assessed the anti-epileptic potential of methanolic extract of L. reticulataagainst maximal electroshock (150 mA intensity for 0.2 s), pentylenetetrazol (70 mg/kg,i.p.), and lithium-pilocarpine-induced grade epilepticus, respectively. It had been found that themethanolic extract of L. reticulata showed significant effect against maximal electroshock and pentylenetetrazol but was not much effective against lithium-pilocarpine-induced status epilepsy and haloperidol-induced catalepsy.

9. Anti-microbial Activity

Vaghasiya and Chanda.[26] studied the antibacterial activity of various solvent extracts ofL. reticulata leaves against five Gram-positive, seven Gram-negative bacterial strains, and threefungal strains. They observed that acetone extract showed no activity against all the testedGram-positive bacterial strains. However, it effectively inhibited two Gram-negative strains (Klebsiellapneumoniae, Proteus mirabilis, and Citrobacter freundii). While, the methanol extract was effective against both Gram-positive (Staphylococcus aureus and S. epidermidis) and Gram-negative strains (Klebsiella pneumoniae and Proteus mirabilis). Similarly, ethanol extracts of L. reticulata leaves exhibitedpotent antimicrobial activity against Bacillus subtilis, Staphylococcus aureus, Escherichia coli, Pseudomonasaeruginosa,

Klebsiella pneumoniae, Aspergillus flavus, and A. niger.[27] In another study, different solventextracts of the aerial parts of L. reticulata were reported to possess antimicrobial property. Among theextracts, chloroform and alcoholic extract inhibited E. coli and P. aeruginosa significantly, whilepetroleum ether extract was effective against K. pneumonia.[28]

10. Anti-depressent Activity

The consequences of malkanguni, a polyherbal, during which L.reticulata is employed for its anti-depressent activity.[29]

11. Antiabortifacient Effect

L. reticulata extract (Leptaden tablet) provides an honest remedy for brand spanking new mothers affected by breast milk deficient or absence. This medicine features a galactagogue effect and also useful within the treatment of habitual abortions. An experimental research in guinea pigs using radioimmunoassay suggested that Leptaden inhibits F2 alpha biosynthesis. This helps in preventing abortion, since any increase in prostaglandins causes abortion or premature delivery. The effect of leptaden therapy is more beneficial over the combined treatment with progesterone. Also, it's been concluded that Leptaden therapy when done alone proved beneficial for the management of imminent abortion.

12. Antianaphylactic Activity

Padmalatha et al.,[33] studied the effect of a polyherbal formulation of DLH-3041 (Himalaya Drug Company, Bengaluru, India), consisting of L. reticulata together of the ingredient, on the active and passive anaphylaxis in rats using mesenteric mast cells and compared it with prednisolone and disodium cromoglycate. The herbal formulation (DLH-3041) showed significant protection against the mastocyte degranulation in sensitized animals.

13. Anti-Implantation Activity

The anti-implantation and hormonal (estrogenic) activities of ethanolic extract of L. reticulata were studied in albino rats by Rani et al.,[34] They concluded that L. reticulata possesses a significantestrogenic activity as well as a very strong anti-implantation activity.

14. Antiulcer Activity

The aqueous leaf extract (100 mg kg□1 and 200 mg kg□1) of L. reticulata was evaluated for antiulcer activity in rats.[35] The results revealed a significant reduction in total acidity, acid

volume, and ulcer index compared to control animals, suggesting the potential of L. reticulata leaves in the treatment of ulcers.

15. Anxiolytic Activity

Rajpurohit et al.,[36] evaluated the anxiolytic activity in Wister albino rats by using elevated plus maze test, light-dark test, hole-board test, and social-interaction test models. The ethanolic leafextract at a dose of 200 mg kg□1 and 400 mg kg□1 per body weight of the animal significantly showed potent anxiolytic activity compared to the control animals. The standard anxiolytic drug diazepam (2 mg kg□1) was used to compare the results.[36]

16. Diuretic Activity

Treatment with whole plant extract of L. reticulata (aqueous and ethanolic) considerably improved the urine volume in normal rats compared to the control groups; however, the effect was relatively less compared to the standard (furosemide). The treatment also significantly increased the renal clearance of potassium, sodium, and chloride ions.[37]

Rasayana – The word rasayana is composed of two words Rasa+Ayana. Rasa means "nourishing juice" and Ayan means "Pathway or channels" hence terms rasayana means by which one gets the excellence of Rasa is known as Rasayana.[5] Accordiong to Ayurveda the physical structure is composed of seven Dhatus starting from Rasa and Rasayana is the way to produce superior quility Dhatus. The Rasayana therapy is clinical speciality of Ayurveda that helps nourish the whole body by strengthing the Rasa Dhatu, the essence of all food we take, and which the body assimilates. Rasayana therapy contains various methods of rejuvenation.

Benefits of Rasayanas

- It enhances the physical strength.
- Increases longivity and youthfulness.
- Increases Ojas.
- Improve skin luster.
- Strengthens mental health.
- Prevents degeneration.
- Delays aging rather reverse aging process.
- Enhances resistance against diseases.
- Revitalizes metabolism.

- Re-establishes and detoxifies the body and mind.

Rasayana Karma of Jeevanti

- Rasa – Madhura rasa – Madhura rasa attribute the predominancy of Prithvi and Jala Mahabhuta. It has various properties such as Bruhana, Sapta-dhatu vardhaka, ojo-vardhana, Aayushyakara, and Jeevaniya. Due to this properties of Madhura rasa its nourishes the Rasa dhatu and according to Kshirdadhi nyaya once a Rasa dhatu get nourished properly then all successive Dhatus get nourishment and due to this Rasayana karma of Jeevanti done appropriately.
- Sheeta virya – Due to the dominancy of Prithvi and Jala Mahabhuta it does the action like Prasadana, Kledana, Sthirikarana of sapta dhatus and also Jeevaniya activity. Due to all this characteristics of Sheeta veerya, Jeevanti does the actions like healing, anti-aging etc and proven the Rasayana Karma.
- Vipaka – Madhura – It increases the Kapha dosha and give the strength to all Dhatus especially Shukra Dhatu, so that Jeevanti gives the strength and power to young as well as oldest people for libido and became a good Aphrodisiac.
- Due to the Madhur Rasa, Sheeta virya and Madhur vipaka of Jeevanti it increases the nutritional value of rasa which in turn synthesis and nourishment of successive Dhatus and helps to promote Health and vigour of tissue regeneration and gives anti degenerative health by promoting immune system.

Anti-oxidant action of Jeevanti

The Flavonoids, tannins and phenolic acid of Jeevanti does anti-oxidant action by following mechanism:

- Flavonoids – It suppresses the ROS formation by inhibition of enzymes and reduce the free radicals and scavenge the free radicals.
- Tannins which is superoxide dismutase inhibit the radical formation and act as free radical scavenging agent.
- Phenolic acid having free radical scavenging and metal chelating properties does the effect on cell signaling pathways and show the effect on gene expression.

CONCLUSION

Jeevanti is a very valuable medicinal plant. This herb is popularly known for its restorative and stimulant properties wont to treat various health ailments. It contains several classes of

bioactive compounds which will surely provide a ray of hope for prevention and cure of degenerative, autoimmune and metabolic (catabolic) diseases on the heighest level of therapeutic efficacy. Due to all properties of Jeevanti it does the actions like Immunostimulant (enhances disease resistance), Nootropics (improve higher integrative health), Anabolics (activates growth), Tonic (mitigates weakness), Geriatrics (prevents aging). This promising herb Jeevanti validates the claim made in Ayurvedic classics regarding to Rasayana effects. L. reticulata with its revitalizing, rejuvenating and lactogenic properties are often used because the main component in many herbal formulations.

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