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A Review on *Chandra Avaleha* an Ayurvedic Formulation in *Anidra* (Insomnia)

Rahul Jaiswal¹, Sharad Rathi², Urmila Shukla³, Anshu Malviya⁴

¹Post Graduate Scholar, Department of Agadtantra Evum Vidhi Vaidyaka, Pt. Khushilal Sharma Govt. Ayurvedic College & Institute, Bhopal, Madhya Pradesh, India.

^{2,4}Lecturer, Department of Agadtantra Evum Vidhi Vaidyaka, Pt. Khushilal Sharma Govt. Ayurvedic College & Institute, Bhopal, Madhya Pradesh, India.

³Professor & HOD, Department of Agadtantra Evum Vidhi Vaidyaka, Pt. Khushilal Sharma Govt. Ayurvedic College & Institute, Bhopal, Madhya Pradesh, India.

ABSTRACT

Avaleha Kalpana is a type of *Kashaya Kalpana*. It is made by boiling and evaporating herbal medicines or other liquids with sweeteners until the *Kashaya* reaches the appropriate confirmatory indicators mentioned in the *Samhita*. Various *Avaleha Kalpana* have been cited by *Acharyas* as recommended for various diseases and disorders. *Chandra Avaleha* is a poly herbal formulation used for the management of various diseases like burning sensation in the hands and feet, dizziness, mania, and insomnia. Its primary constituents include *Shatavari Shankhapushpi*, *Vidarikand*, and *Kushmand*, in equal quantity. *Prakshep Dravya* (Finely ground medicine powder) is also added. Insomnia (*Anidra*) is the disorder of inadequate or poor quality and also quantity of sleep either due to difficulty in initiation of sleep (sleep onset insomnia), difficulty in maintaining sleep because of frequently waking up in between (sleep maintenance insomnia) or waking up too early in the morning (sleep offset insomnia). Here an attempt is carried out to explore the action of *Chandra Avaleha* for insomnia.

Key words: *Avaleha, Chandra Avaleha, Anidra, Insomnia, Shatavari, Shankhapushpi, Kushmand, Vidarikand*

INTRODUCTION

The concept of *Traya Upastambha* in Ayurveda emphasizes three fundamental pillars essential for maintaining physical and mental well-being. These three components are *Aahar* (food), *Nidra* (sleep) and *Brahmacharya* (cilibacy).^{[1],[2]} Sleep (*Nidra*) is one of the essential factors for a healthy life. It is crucial to

understand the importance of sleep. *Acharya Charak* has mentioned the importance of sleep in terms of happiness-misery, nourishment-emaciation, strength-weakness, potency-impotency, intellect-ignorance, life, and death of an individual depends on the sleep whether it is proper or improper.^[3] *Anidra* (insomnia) is the disorder characterised by insufficient or poor quality sleep, as well as a lack of quantity, either because of trouble falling asleep (sleep onset insomnia), trouble staying asleep because of frequent waking during the night (sleep maintenance insomnia), or excessive early morning wakefulness (sleep offset insomnia). Chronic insomnia leads to severe fatigue, anxiety, depression and lack of concentration.^[4] Several lifestyle factors such as consumption of caffeine, excessive consumption of alcohol and intoxicating drugs, smoking, overwork, excessive exercise, and poor sleeping habits also play a significant role in the development of insomnia. In *Ayurveda*, insomnia is classified under the category of

Address for correspondence:

Dr. Rahul Jaiswal

Post Graduate Scholar, Department of Agadtantra Evum Vidhi Vaidyaka, Pt. Khushilal Sharma Govt. Ayurvedic College & Institute, Bhopal, Madhya Pradesh, India.

E-mail: jaiswal420rahul@gmail.com

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Nanatmaja Vat Vyadhi.^[5] And its described as a symptom of various disorders,^[6] and as a psychological disorder.^[7] Insomnia can sap not only energy level and mood but also health, work performance and quality of life. The *Samhita* lists several medicines for insomnia, *Chandra Avaleha* being one of them. *Avaleha Kalpana* is the types of *Kashaya Kalpana*. It is made by boiling and evaporating moisture content of herbal medicines or other liquids with sweeteners until the *Kashaya* reaches the appropriate confirmatory indicators mentioned in the *Samhita*. Various *Avaleha Kalpana* have been cited by *Acharyas* as recommended for various diseases and disorders. *Avleha* are semisolid dosage forms that are predominantly taken orally.

MATERIALS AND METHODS

A comprehensive evaluation of the *Ayurvedic* text book and its corresponding commentaries has been conducted. The topic has also been reviewed in the modern medicine text book, several clinical studies published in index journals that are gathered from the Ayush research portal, journals online, and numerous journal websites.

DRUG REVIEW

Chandra Avaleha is a poly herbal formulation used for the management of various diseases like burning sensation in the hands and feet, dizziness, mania, and insomnia. It has been described by *Acharya Yadavji Trikamji* in *Sidhha Yoga Sangraha*. Its primary constituents include *Vidarikand*, *Shankhapushpi*, *Kushmand*, and *Shatavari* in equal quantity. *Prakshep Dravya* (Finely ground medication powder) is also added.

Shatavari (Asparagus racemosus)

Numerous *Ayurvedic* literature, including *Bhavparakash*, *Charak Samhita*, *Susruta Samhita*, and multiple *Nighnatus*, made reference to *A. racemosus*.

Properties and Action

Rasa: Madhura, Tikta

Guna: Snigdha, Guru

Virya: Sita

Vipaka: Madhura

Karma: Vrsya, Balya, Medhya, Rasayana, Kaphavataghna, Pittahara, Vatahara, Stanyakara, Hradya, Netrya, Sukrala, Agnipushtikara^[8]

Important Formulations - *Satavari Guda, Brahma Rasayana, Puga Khanda, Saubhagya Shunthi, Maha Narayana Taila, Brahat Chagaladya Ghrita, Satavari Ghrita, Satavari Kalpa, Asvagandharitha, Narasimha Churna*.^[9]

Therapeutic Uses - *Sotha, Kshaya, Parinama Sula, Gulma, Atisara, Raktatisara, Raktavikara, Mutrarakta, Amlapitta, Arsa, Svarabheda, Naktandhya, Vatarakta, Raktapitta, Visarpa, Sutika Roga, Stanya Dosa, Stanya Kshaya*.^[10]

Constituents - Sugar, Glycosides, Saponin, Sitosterol.

Phytochemicals of *A. racemosus*

Shatavari known to have a wider range of phytochemical constituents which are mentioned as below.

Kaepfrol - Kaepfrol with Sarsopgenin can be isolated from tuberculous root of *A. racemosus*.^[11]

Furan compound - Racemofuran^[12]

Flavenoids - Glycosides of quercetin, rutin, and hyperoside and present in flower and fruits.^[13]

Sterols - Root contains sitosterols, 4-6-dihydroxy-2-0 benzaldehyde and undecanylacetanoate^[14]

Polycyclic alkaloid - Asparagimne A.^[15]

Cyclic hydrocarbon - racemosol, dihydrophenan - threne.^[16]

Trace minerals such as Zinc, Copper, Cobalt, with calcium, potassium and selenium.^[17]

Essential fatty acids - Gamma linoleinic acids, Vitamin A and quercetin.^[18]

Asparagus racemosus Scientific Studies

Antitussive effect - Roots of *A. racemosus* methanolic extract at the dose of 200 and 400mg/kg showed very effective as an antitussive agent in mice.^[19]

Antiprotozoal activity - *A. racemosus* crude alcoholic extract in vivo is working as an inhibitory agent in growth of *Entamoeba histolytica*.^[20]

Antihepatotoxic activity - *A. racemosus* alcoholic extract of root has been shown to significantly reduce the enhanced levels of alanine transaminase, aspartate transaminase and alkaline phosphate.^[21]

Antineoplastic activity - Fresh root of *A. racemosus* in Chloroform/ methanol (1:1) extract of has been reported to reduce the tumour incidence in female rats. The report suggested it as a mammatropic or lactogenic.^[22]

Immunomodulatory activity - Immunomodulating property of *A. racemosus* has proved to protect the rat and mice against experimental induced abdominal sepsis.^[23,24]

Antidepressant activity - *A. racemosus* evaluated as an antidepressant effect in rats where methanolic extract of roots of *A. racemosus* in various doses of 100, 200 and 400mg/kg daily for 7 days and then subjected to tests like forced swim test (FST) and learned helplessness test (LH). The results indicated that immobility in FST and increased avoidance response in LH indicating antidepressant agent in behavioral experiments. So, *Shatavari* can work as significant antidepressant agent and its effect is mediated through serotonergic, noradrenergic systems.^[25]

Anti-stress activity - *A. racemosus* can be useful as a anti stress agent. The effects of the methanol and aqueous extract of roots of these plants were examined in an experimental mouse stress model.^[26]

Anti-inflammatory effects - *A. racemosus* root extract at the dose of 200mg/kg can reduce the tissue weight, inflammatory cytokine production, neutrophilmediated myeloperoxidase activity, so it can be worked as potential anti-inflammatory agent.^[27]

Shankhapushpi (Convolvulus pluricaulis)

Shankhapushpi (*C. pluricaulis*) has been mentioned by various Ayurvedic texts like *Bhavparakash*, *Charak Samhita*, *Sushruta Samhita* and several *Nighnatu*s. It's classified under four *Medhya Rasayana* by *Acharya Charaka*.

Properties and Action

Rasa : Tikta, Katu, Kasaya

Guna : Sara

Virya : Sita

Vipaka : Katu

Karma : Pittahara, Kaphahara, Rasayana, Medhya, Balya, Mohanasaka, Ayusya^[28]

Important Formulations - *Agastyaharitaki Rasayana*, *Brahma Rasayana*, *Brahmi Ghrita*, *Manasamitra Vataka*, *Gorocanadi Vati*, *Barmi Vati*

Phytochemicals of Convolvulus pluricaulis

It contains fructose, glucose, rhamnase, sucrose, starch, proteins, and amino acids. It also contains the alkaloids convolvamine, convolvine, phyllabine, convolidine, confoline, convoline, subhirsine, convosine, and convolidine, as well as fatty acid and wax constituents, hydrocarbons, aliphatic and sterol, and scopolin and Flavon Coumarin.^[29]

Convolvulus pluricaulis Scientific Studies

Effect of CNS - The study examined the phytochemical profile of *Convolvulus pluricaulis* aerial portions and found that they contained carbohydrates, glycosides, tannins, triterpenoids, flavonoids, alkaloids, and saponins. Extracts from ethanol, aqueous, and chloroform demonstrated a notable anxiolytic effect.^[30]

The dried powder of *Shankhapushpi* administered in anxiety induced animals, showed the significant anxiolytic behaviour.^[31]

The aqueous extraction of roots also showed the neuroprotective properties by scavenging various reactive oxygen species.^[32]

Antiaddictive Effect - *Shankhapushpi Churan* (powder) was studied on alcoholic addictive mice for its antiaddictive behaviour. It showed the effective result on Cortico-hippocampal GABA levels and reported the antiaddictive potential.^[33]

Neuroprotective effect - The methanolic extract of four varieties of *Shankhapushpi* showed the anti-amnesic

effect by inhibiting the 5-lipoxygenase which is responsible for the neurodegenerative disorders.^[34]

The aqueous extract of plant also reported neuroprotective effect scopolamine induced stress.^[35]

Antigastric & Antiulcer effect - The *Convolvulus pluricaulis* in the form of fresh juice was given for 5 days, reported the significant result in protecting gastric mucosa by the production of mucin.^[36]

Hepatoprotective effect - The hepatoprotective effect of *Convolvulus pluricaulis* was studied on aqueous, alcoholic, chloroform extract. It is reported that serum biochemical parameters are decreased by extract treated animals.^[37]

Vidarikand (*Pueraria tuberosa*)

Indian kudzu is the common name for *Vidarikand* (*Pueraria tuberosa*). The *Vidarikand* in *Madhur Skandh* and *Kanthyā, Snehopaga Mahakashaya*, is mentioned by *Acharya Charak*. *Acharya Vagbhata* referenced *Vidarikand* in *Shaka Varga* and *Madhur Gana*. The *Vidarikand* is mentioned by *Bhavaprakash* in its *Guduchyadi Varga*. *Vidarikand* is mentioned in *Vidarigandhadi Gana*, *Valli Panchamoola*, and *Madhura Varga* in the *Sushruta Samhita*.

Properties and Action

Rasa: Madhura

Guna: Snigdha, Guru

Virya: Sita

Vipaka: Madhura

Karma: Vatahara, Pittahara, Stanyada, Sukrala, Mutrala, Jivaniya, Rasayana, Brahaniya, Svarya, Varnaya, Balya^[38]

Important Formulations - *Vidaryadi kwatha Curna, Vidaryadi Ghrita, Marma Gutika, Manmathabhra Rasa*.^[39]

Phytochemicals of *Pueraria tuberosa*

85.1% dry matter, 64.6% carbs, 10.9% protein, 28.4% crude fibres, and 0.5% ether extract are all present in tubers. The compounds fructose, glucose, sucrose, and B-sitosterol have been identified. pterocarpan-

tuberosin, pterocarpanone-hydroxytuberosone, two pterocarpenesanhydrotuberosin and 3-O-methylanhydrotuberosin, a coumestan-puerarostan, an isoflavone-pueraronone, and a coumestan-puerarostan 3. Rich in isoflavonoids such genistein, daidzein, puerarin, and gingistin are tubers.^[40]

Scientific Studies

Antioxidant - The primary isoflavonoid in *Vidarikand* that has been shown to have antioxidant properties is puerarin.^[41]

Immunomodulating - The effects of isoflavones puerarin, daidzein, and genistein are primarily responsible for the substance's potential therapeutic use as an immunomodulator.^[42]

Cardiotonic - The compound puerarin, which is found in Indian kudzu, has cardioprotective properties and guards against stress-induced myocardial ischemia.^[43]

Aphrodisiac effect - According to our *Samhitas*, it exhibits the aphrodisiac effect.^[44]

Nootropic effect - The nootropic effect of *Vidarikand*, which includes its ability to improve memory, increase neurogenesis, improve cognitive function, and boost intellect, is also present.^[45]

Anti-oxidant - The enhanced activity of red blood cell anti-oxidant enzymes contributes to the anti-inflammatory impact of *Pueraria tuberosa* extracts.^[46]

***Kushmanda* (*Benincasa hispida*)**

Kushmanda is a significant medicinal plant that is well-known for both its therapeutic and dietary uses. Its limited usage has been described by *Brhat Trayi* under the category of *Phalavarga*. It is most helpful in *Apasmara* and *Mutravikaras*. It is widely quoted in every *Nighantus*.

It is cited by *Dhanwantari Nighantu* as the greatest among the *Valliphala*. The characteristics of mature fruits, unripe fruits, juice, pulp, and leaves were all described independently by *Kaiyadeva Nighantu*.

Properties and Action

Rasa : Madhura, Amla

Guna : Laghu

Virya : Sita

Vipaka : Madhura

Karma : Dipana, Hridya, Bastisodhaka, Vrisya, Balya, Mehana, Tridosahara, Arocakahara, Vatapittajit

Important Formulations - Kusmandaka Rasayana, Dhatryadi Ghrita, Vastyjmayanaka Ghrita.^[47]

Therapeutic Uses - Mutraghata, Prameha, Mutrakaccha, Asmari, Trishna, Manasa Vikara.

Phytochemical

Benincasa hispida fruits' primary ingredients were volatile oils, proteins, carotenoids, glycosides, saccharides, vitamins, minerals, uronic acid, and β-sitosterin

Scientific Studies

Anti-oxidant activity - The antioxidant activity and total phenolic content (TPC) of *Benincasa hispida* seeds extract were investigated using conventional Soxhlet extraction (CSE), and DPPH and ABTS scavenging activity tests. The ethanolic extract gave the highest total phenolic content 11.34±1.3 mg GAE/g and antioxidant activity followed by ethyl acetate and n-hexane extract.^[48]

Anti-inflammatory - Early studies on *Benincasa hispida*'s aqueous extract revealed that it had anti-inflammatory properties.^[49]

Antibacterial activity - A variety of pathogens, including gramme positive bacteria like *M. luteus*, *S. aureus*, and *B. subtilis* and gramme negative bacteria like *E. coli* and *P. pneumophila*, were examined for the antibacterial activity of *B. hispida* seed oil.^[50]

Prakshep Dravya (Finely ground medication powder)

SN	Drug Name	Botanical Name	Part Used	Karma ^[51]
1.	Amalki	<i>Embllica officinalis</i>	Fruit	Tridosahara, Rasayan, Vrashya
2.	Jatamansi	<i>Nordostachys jatamansi</i>	Root	Tridosahara, Medhya, Nindrajanaka

3.	Sarpgandha	<i>Rauwolfia serpentina</i>	Root	Nidraprad, Vishaghna, Vatakaphahara
4.	Ela	<i>Elettaria cardamomum</i>	Seed	Anulomak, Hradya, Rochana, Dipan
5.	Dalchini	<i>Cinnamomum zeylanicum</i>	Twak	Kaphavatahara, Vishaghna
6.	Tejpatra	<i>Cinnamomum tamala</i>	Patra	Kaphavatahara, Rochya
7.	Nagkesar	<i>Mesua ferrea</i>	Punkesar	Urdhva Jatrugat Rogahara, Vranaya
8.	Munnaka	<i>Vitis vinifera</i>	Fruit	Vatapittahara, Brahniya
9.	Swet Chandan	<i>Sentalum album</i>	Kaand	Pittahara, Hadya, Vrashya
10.	Kamal	<i>Nelumbo nucifera</i>	Kand	Pittahara, Santaphara, Vranaya
11.	Sariva	<i>Hemidesmus indicus</i>	Root	Tridoshaghna, Raktashodhak
12.	Mustak	<i>Cyperus rotundus</i>	Kand	Pittakaphahara, Sothahara
13.	Padamak	<i>Prunus cerasoides</i>	Kaand	Pittahara, Rochya,
14.	Ushir	<i>Vetiveriya zizanioidis</i>	Root	Vatapittahara, Dehklantihatra
15.	Lavang	<i>Syzygium aromaticum</i>	Pushpakalika	Kaphpittsamaya aka Rochya
16.	Sita			

DISCUSSION

Chandra Avaleha is an Ayurvedic formulation containing *Shatavari*, *Shankhapushpi*, *Vidarikand*, and *Kushmanda* among other medicinal substances. It is considered a potentially effective treatment for insomnia, characterized by insufficient or poor-quality sleep. *Chandra Avaleha* takes a holistic approach to address various aspects of insomnia, including difficulties in falling asleep, staying asleep, and waking up refreshed, through the combined action of its ingredients.

According to *Ayurvedic* texts, *Anidra* (insomnia) is primarily caused by imbalances in *Vata* and *Pitta Doshas*. *Shatavari*, *Vidarikand*, and *Kushmanda* help pacify these aggravated *Doshas* due to their *Madhura Rasa* (sweet taste), *Sita Virya* (cooling potency), and *Madhura Vipaka* (sweet post-digestive effect). *Shankhapushpi*, with its *Tikta Rasa* (bitter taste) and *Sita Virya*, contributes to reducing *Pitta* dosha. Almost all components of *Chandra Avaleha* possess *Sita Virya* and *Madhura Vipaka* properties, which help balance *Vata* and *Pitta Doshas* and promote restful sleep.

Chandra Avaleha has *Balya* (strengthening) and *Medhya* (brain tonic) properties, which reduce anxiety and stress, thereby enhancing sleep quality. *Vidarikand*, renowned for its rejuvenating properties, helps calm the mind and promote relaxation, facilitating the onset of sleep. *Shankhapushpi*, a well-known brain tonic, contributes to reducing anxiety and stress levels, common underlying factors in sleep disturbances. *Shatavari* further enhances the effectiveness of *Chandra Avaleha* in managing insomnia by supporting the nervous system and promoting a sense of calmness and tranquillity conducive to better sleep quality.

CONCLUSION

Overall, the comprehensive formulation of *Chandra Avaleha* addresses the intricate interplay of factors contributing to insomnia, offering a holistic approach towards restoring healthy sleep patterns. Further clinical studies and research are to validate and elucidate the mechanisms underlying the efficacy of

Chandra Avaleha in the management of insomnia, paving the way for its wider acceptance and utilization in clinical practice.

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