

A REVIEW ON THE ROLE OF MEDICINAL PLANTS IN THE MANAGEMENT OF ANIDRA (INSOMNIA)

Panara Kalpesh¹ Karra Nishteswar¹ Goyal Mandip²

¹Dept. of Dravyaguna, ²Dept. of Kayachikitsa, IPGT&RA, Gujarat Ayurved University, Jamnagar, Gujarat, India

ABSTRACT

According to *Ayurveda*, *Nidra* (sleep) plays an important role in maintaining health, proficiency and emotional well-being. *Aswapna* or *Nidranasha* (sleeplessness) mentioned in *Ayurvedic* classical text can be correlated with insomnia. The modern medical science is still not having a definite treatment for insomnia. Most sedative hypnotic drugs generally used for insomnia produce dose-dependent depression of central nervous system function, while in *Ayurvedic* classical text, holistic approach has been applied while treating insomnia. Objective of this work was to compile and review the classical literature regarding management of *Anidra*; scientifically reported classical and non-classical sedative herbs; and clinical trials conducted on *Anidra*. Reviewed data compiled from *Brihatrayee*, CCRAS databases, ICMR publications and database of IPGT&RA. The 30 classical and 08 non-classical herbs with sedative activity were reported. Clinical studies suggest that *Anidra* (insomnia) can be managed better by procedure *Shirodhara* and simultaneous administration of *Ayurvedic* herbal formulation containing the drugs having tranquillo-sedative effect.

Keywords: *Nidra*, Sleep, *Anidra*, insomnia, Sedative herbs

INTRODUCTION

Being an eternal science, *Ayurveda*, the 'science of life', deals with physical, psychological as well as spiritual well being of an individual. In *Ayurvedic* literature, the three factors i.e. *Ahara* (diet), *Nidra* (sleep) and *Brahmacharya* (celibacy), are mentioned as three *Upasambhas* (sub-supporting pillars) which play an important role in maintaining the health.¹ Among these three, sleep plays an important role in maintaining health, proficiency and emotional well-being.²

Research findings show that poor sleep can increase risk of developing obesity, diabetes, high blood pressure or heart disease.³ WHO health survey reveals that about 35 percent of respondents in India have reported mild to extreme diffi-

culty associated with sleeping.⁴The modern medical science is still not having a definite treatment for insomnia. Use of sedative hypnotic like benzodiazepines drugs is one approach to therapy of insomnia. Most sedative and hypnotic drugs produce dose-dependent depression of central nervous system function. Use of benzodiazepines produce central nervous depression include drowsiness, impaired motor coordination, confusion and memory loss, blurred vision, hallucinations and paradoxical reactions. The ideal hypnotic drug should allow the patient to fall asleep quickly and should maintain sleep of sufficient quality and duration so that the patient awakes refreshed without a drug hangover. Also, this type of drug should have very low toxicity and should not interact

with other medication in such a way as to produce unwanted or dangerous effect.⁵Hence, it becomes imperative to search out treatment which is safe and effective from natural systems of medicine like *Ayurveda* which can help patients with insomnia.

Ayurvedic text like *Charaka samhita*, *Sushruta samhita*, *Ashtanga hridaya* and *Bhavprakash* provided the treatment for *Anidra* (insomnia). Holistic treatment approach has been applied while treating insomnia in *Ayurvedic* classical text. Authors of classical texts have mentioned pharmacological and non-pharmacological treatments with proper dietary advice. Here, effort has been made to review on management of *Anidra* (insomnia) from the above mentioned *Ayurvedic* classical texts. In addition to gather information regarding *Ayurvedic* herbs having sedative activity, Database on Medicinal Plants used in *Ayurveda & Siddha*- CCRAS; Reviews on Indian medicinal plants- ICMR; and A Selection of Prime *Ayurvedic* Plant Drugs- were also searched. Clinical trials on insomnia were also reviewed from *Ayurvedic* research database of IPGT&RA, Jamnagar.

Anidra (Insomnia)^{1, 6, 7, 8}

Acharya Charaka has stated that happiness and sorrow, growth and wasting, strength and weakness, virility and impotence, the knowledge and ignorance as well as existence of life and its cessation depend on the *Nidra* (sleep). According to him, *Nidra* gives *Pushti* (Anabolic effect) and *Jagarana* (vigil) produces *Karshana* (Catabolic effect) of the body. Untimely and excessive sleep and prolonged vigil take away both happiness and longevity. As wholesome diet is needed for maintenance of body so is the sleep. Obesity and leanness are particularly caused by sleep and diet.

Words such as *Anidra*, *Nidranasha* and *Asvapna* are used for insomnia in *Ayurvedic* literature. *Charaka* included the *Asvapna* in 80 *Nanatmaja Vata* diseases According to *Acharya Sushruta*, *Nidranasha* is caused by aggravated conditions of the bodily *Vayu* and *Pitta*, as aggrieved state of the mind, wasting of *Dhatus* and trauma (physical or mental). *Acharya Vagbhata* has given *Nidana* (causative factor) of *Nidranasha* with very broad aspect namely *Kala* (naturally in old age), *Shilakshaya* (irregular sleep pattern), *Vyadhividdhi* (secondary to other increased disease), *Anila-pittaviddhi* (increased *Vata* and *Pitta Dosha*). Aggravating factor of *Vata* like purgation (*Virechana*), evacuation of head (*Shirovirechana*), emesis (*Chardana*), fear, anxiety, anger, smoking, blood-letting (*Raktamokshana*), fasting, uncomfortable bed are considered as a cause of insomnia.

Anidra classified first by *Charaka* as *Pranashta* (primary) and *Nimitta* (secondary). Symptoms of *Anidra* are *Jrumbha* (yawning), *Angamarda* (body ache), *Tandra* (drowsiness), *Shirogaurava* (heaviness of the head), *Jadya* (heaviness), *Glani* (uneasiness), *Bhrama* (giddiness) and *Apakti* (Indigestion). Among these, most of the symptoms can be correlated with symptom of insomnia given by Diagnostic and Statistical manual of Mental disorders IV – Text Revision (DSM IV-TR). It indicates *Acharyas* have profound knowledge of physio-pathology of insomnia.

Treatment of Anidra^{1,6,7,8}

The line of treatment which is described for *Anidra* in different *Samhitas* is similar. It indicates the mental relaxation is prime need along with *Vatahara* treatment for management of insomnia. Whole management has been described in form of specific procedures, psychiatric treatment, drugs and Diet as follows:

1) Specific procedures^{1,6,7,8}

- *Abhyanga* (body massage manually)
- *Utsadana* (anointing)
- *Chakshu-tarpana* (saturating soothing drops on eye)
- *Shiro-lepa* (paste on head)
- *Mukhalepa* (paste on face)
- *Shirobasti* (oil is made to stand over the scalp for a prescribed time)
- *Shirodhara* (oil dripping on head)
- *Karnapurana* (suturing ear with drops)
- *Padabhyanga* (food massage)
- *Snana* (bath)
- *Samvahana* (Gentle rubbing)

2) Psychiatric treatment (*Manasika Upachara*)^{1,6,7,8}

- Pleasant smell, sound, touch
- Psychic pleasure
- Sense of satisfaction
- Thinking of things pleasant to mind and fulfillment of desire
- Follow the *Brahmacharya*
- To embrace with beautiful lady
- Comfortable bed and home and proper time

3) Treatment with herbs/drugs

- *Pippali* root powder with Jaggery¹²
- Powder of *Bijapoora* leaves with honey¹⁰
- *Kakajangha*, *Apamarga*, *Kokilaksha*, *Shooraparnika*- all in equal quantity, decoction is to be prepared or its roots tie with *Shikha* (plait)¹¹
- *Kantakaridwaya*, *Vasa*, *Kakamachi*, *Punarnava*, *Vartakimoola*- all in equal quantity, decoction is to be prepared¹¹
- *Ashwagandha* powder with sugar and Ghee¹³
- Decoction of *Jivaneeya* group of drugs with milk and ghee⁷
- *Lokanatha Rasa* with *Bhanga* powder and honey at night⁹

- To tie *Upodika* root or whole plant on head¹³
- To tie *Kakajangha* root on head¹³
- *Anjana* (application on eyes) of triturated *Maricha* in saliva of horse¹³
- Paste of *Bhanga* powder with milk of goat, apply on sole¹²
- Rubbing of sole with *mastu* (curd water)¹¹

4) Ahara (dietary advice)^{1,6,7,8}

Gramya-anupa-udaka-mansarasa (meat soup of domestic, marshy and aquatic animals); *Shali* rice with curd, milk, unctuous substance, alcohol; *Mahisha ksheera* (milk of buffalo); *Peeyush*, *Morata*, *Kilata* and *Koorchika* (milk product); *Godhuma* (wheat); *Pishtanna* (dough preparations), *Ikshu* (sugar cane), *Draksha* (grape), *Varahamansa* (meat of boar); *Guda* (jaggery); *Matsya* (fish); *Dadhi* (curd); *Masha* (black gram); *Sita* (sugar); *Yusha* (pulses soup); *Sneha* (fat); *Madhya* (alcoholic preparations); are suitable dietary substances for patients of insomnia.

Alcoholic preparation induces sedation and leads to sleep, while other dietary substances will control the causative factor i.e. aggravated *Vata*. If *Vata* is controlled, patient gets the sleep. Nowadays, Milk product like *peeyusha*, *Morata*, *Kilata*, *Kurchika* are not found to be used in practice.

After reviewing classical data, it has been observed that *Acharyas* did not emphasize only on herbal formulation but also on specific procedure like *Abhyanga*, *Utsadana*, *Shirodhara* etc., and dietary habits while treating a psychosomatic disease i.e. insomnia. Holistic approach to manage insomnia with *Ayurveda* can be divided in 3 types i.e., *Nidana parivarjana* (avoidance of causative factor), *Dosha pratyani chikitsa* (drugs applied to alleviate *Dosha*) and *Vyadhi pratyani chikitsa*

(drugs which directly acting on disease). For insomnia main causative factor is stress, and psychic treatment like pleasant smell, sound, touch; sense of satisfaction; adaptation of *Brahmacharya* (celibacy); are advised to control stress and to relax the mind. Dietary regimen alleviates the vitiated *Dosha* and herbal formulations directly act on disease pathology. Proper

combination of these three parts of treatment ultimately cures disease.

Reported sedative herbs: Total 38 herbs have been found which have sedative activity and among them 30 herbs are classical and 8 are non-classical herbs. Table 1 and 2 indicates the classical and non-classical reported herbs having sedative activity with used experimental models.

Table 1: Reported classical herbs having sedative activity

| Sl. No. | Herbs with Sanskrit & Latin name | Part used or chemical composition | Used Experimental models/ mode of action |
|---------|--|--|---|
| 1 | <i>Vacha</i> <i>Acorus calamus</i> Linn. ^{15,22} | Steam volatile fractions of the root and rhizome (petroleum ether extract) | Prolonged the sleeping time with pentobarbital, hexobarbital and ethanol. |
| | | Acorus oil | Barbiturate-induced hypnosis |
| | | Asarone and β -asarone (active principle of rhizome) | Enhanced the anesthetic activity of pentobarbitone, hexobarbitone and ethanol in mice |
| 2 | <i>Priyangu</i> <i>Aglaia diepenhorstii</i> Miq. ²² | Essential oil from the root bark | Pentobarbitone-induced hypnosis, motor coordination and spontaneous activity in mice |
| 3 | <i>Saptaparna</i> <i>Alstonia scholaris</i> Linn. R.Br. ²³ | Pricrinine, the major alkaloid of the flowers | Hexobarbitone narcosis, morphine analgesia and anticonvulsant action of diphenylhydantoin in albino rats. |
| 4 | <i>Kajutaka</i> <i>Anacardium occidentale</i> Linn. ²³ | Essential oil of the plant at a dose of 150 and 300 mg/kg | Behavior, sodium pentobarbitone-induced hypnosis, rotarod performance, conditioned avoidance response and pain threshold of albino rats |
| 5 | <i>Puga</i> <i>Areca catechu</i> Linn. ^{18,24} | Arecoline in a dose of 1 mg/kg | Maze learning technique and rotarod test |
| 6 | <i>Nimba</i> <i>Azadirachta indica</i> A. Juss ^{15,24} | Dried material and filter paper material | Locomotor activity and pentobarbitone-induced hypnosis, oral administration in mice |
| 7 | <i>Brahmi</i> <i>Bacopa monnieri</i> Linn. ²⁵ | Alcoholic extract in a dose of 25 mg/kg | Thiopental sleeping time in mice |
| | | Plant extract in a dose of 100 mg/100g bw | Barbiturate hypnosis potentiation effect in albino rats |
| 8 | <i>Sallaki</i> <i>Boswellia serrata</i> Roxb. ^{15,25} | Non phenolic fraction of gum resin | Active principle in the fraction has morphine-like chemical structure |
| 9 | <i>Punnaga</i> <i>Calophyllum inophyllum</i> Linn. ²⁶ | Xanthenes | Decreased spontaneous motor activity, loss of muscle tone, pentobarbitone sleeping time and ether anesthesia in mice and rates |
| 10 | <i>Aragwadha</i> <i>Cassia fistula</i> Linn. ²⁶ | Methanol extract of the seeds | Potentiated the sedative actions of sodium pentobarbitone, diazepam, meprobamate and chlorpromazine |
| 11 | <i>Devadaru</i> <i>Cedrus deodara</i> (Roxb.) ²⁶ | Wood essential oil | Motor incoordinating activities in mice, pentobarbitone-induced hypnosis |
| 12 | <i>Jyotismati</i> <i>Celastrus paniculatus</i> Willd ^{16,26} | Crude seed oil in a dose of 1 g | Tranquilizing effect on adrenaline and amphetamine-induced excitement in mice |
| | | Glycosides (brahmoside and brahminoside) | Decrease in motor activity, increase in hexobarbitone sleeping time |

| | | | |
|----|--|--|--|
| | | Alcoholic extract of the plant in a dose of 100 mg/kg body weight | Potentiating of barbiturate sleeping time, decrease in brain acetylcholine and increase in brain catecholamines in rats |
| 13 | <i>Tarkari</i> <i>Clerodendrum phlomidis</i> Linn. ²⁸ | Methanolic extract of leaves | Potential of phenobarbitone-induced sleeping time in mice at 400 and 600 mg/kg, decrease in general behavioural profiles in mice (at 200, 400 and 600 mg/kg) |
| 14 | <i>Shankpushpi</i> <i>Convolvulus prostratus</i> Forssk. ^{20,28} | Alcoholic extracts of the whole plant | Potential of pentobarbitone hypnosis in rats. Plant shows maximum barbiturate hypnosis potentiating activity during spring season |
| 15 | <i>Aparajita</i> <i>Clitoria ternatea</i> Linn. ²⁸ | Alcoholic extract of the stem, flowers, leaves and fruits | Diminution of spontaneous motor activity; and increase in sedation in mice, potentiation of barbiturate hypnosis in rats. |
| 16 | <i>Bhustrina</i> <i>Cymbopogon citratus</i> stapf. ²⁹ | Essential oil from the leaves | Potentiated the pentobarbitone induced hypnosis in mice |
| 17 | <i>Musta</i> <i>Cyperus rotundus</i> Linn. ^{17, 29} | Alcoholic extract of tubers | Tranquillizing activity in rats |
| 18 | <i>Karanja</i> <i>Derris indica</i> (Lamk.) ³⁰ | Pongamol | Gross behavioural effects and electroencephalography |
| 19 | <i>Nirvisha</i> <i>Delphinium denudatum</i> Wall. ³⁰ | aqueous extract of root | pentobarbitone induced hypnosis |
| 20 | <i>Paribhadra</i> <i>Erithrina indica</i> Lam. ³¹ | Methanolic extract of the leaves | Pentobarbital sodium injected in rat |
| 21 | <i>Jatamansi</i> <i>Nardostachys jatamansi</i> DC. ^{20,14,47} | Jatamansone (isolated from air-dried rhizomes), sesquiterpene valeranone | Prolongation of barbiturate hypnosis, the impairment of rotarod performance |
| 22 | <i>Kamala</i> <i>Nelumbo nucifera</i> Gaertn. ¹⁴ | Methanolic extract of rhizomes | Examined for psychopharmacological effects in different experimental animal (rats, mice) models |
| 23 | <i>Tagara</i> <i>Valeriana Jatamansi</i> Jones. ^{14,48} | Flavonoids (linarin, 6-methylapigenin, and (-)-hesperidin) | sodium thiopental-induced sleep test, hole board test |
| 24 | <i>Aswagandha</i> <i>Withania somnifera</i> (Linn.) Dunal. ^{17,14} | Ethanol (70%) extract of roots | Produced sedation in mice, dogs, monkeys, rabbits and rats |
| 25 | <i>Ahiphena</i> <i>Papaver somniferum</i> Linn. ^{21,36} | Morphine | suppression of locomotor activity |
| 26 | <i>Maricha</i> <i>Piper nigrum</i> Linn. ^{19,41} | Ethanol extract | Midazolam induces hypnosis in male wistar albino rats |
| 27 | <i>Jatiphala</i> <i>Myristica fragrans</i> Houtt. ^{18,42} | Acetone soluble part of n-hexane extract | Pentobarbitone-induced sleep and haloperidol-induced catalepsy |
| 28 | <i>Parijata</i> <i>Nyctanthes arbor-tristis</i> Linn. ^{18,43} | Hot flower infusion | Using hole board technique in rats |
| 29 | <i>Bhanga</i> <i>Cannabis sativa</i> Linn. ⁴⁴ | Crude ethanol and petroleum-ether fractions | Spontaneous motor activity in mice |
| 30 | <i>Mandookaparni</i> <i>Centella asiatica</i> Linn. ⁴⁵ | Alcoholic extract | It has been reported to be tranquilizing in rats, an activity that has been attributed to a triterpene, Brahmoside |

Table 2: Reported non-classical herbs having sedative activity

| Sl. No. | Herbs | Part used or chemical composition | Used Experimental models/ mode of action |
|---------|--|---|--|
| 1 | <i>Artabotrys hexapetalus</i> R.Br. ²⁴ | Essential oil from the laves in the doses of 150 and 250 mg/kg | Spontaneous motor activity, pentobarbitone sodium-induced hypnosis, rotarod performance and conditioned avoidance response |
| 2 | <i>Artemisia capillaries</i> Thumb. ²⁴ | Scoparone | In rats and mice produced diminution of locomotor activity, prolonged barbiturate-induced sleeping time |
| 3 | <i>Canscora decussata</i> Roxb. ²⁶ | Mangiferin (isolated phytoconstituents of <i>Canscora decussata</i>) | Decreased spontaneous motor activity in mice and rats |
| 4 | <i>Carvia callosa</i> (Nees) Bremek. ²⁶ | 50 percent ethanolic extract of the plant (excluding root) | Potential of barbiturate sleeping time and effect on rotarod test in mice |
| 5 | <i>Cissus repens</i> Lamk. ²⁷ | 50 percent ethanolic extract of the plant | Gross behavior and barbiturate potentiation in mice |
| 6 | <i>Catharanthus roseus</i> Linn. ²⁶ | Alkaloid isolated from the root bark | tranquillizing properties similar to serpentine |
| | | Total alkaloids and chloroform fraction | Potentiated hexobarbitone sleeping time in rats |
| 7 | <i>Diploknema butyracea</i> (Roxb.) ³⁰ | 50 percent ethanolic extract of the seeds | Potentiated barbiturate induced hypnosis in mice |
| 8 | <i>Sarpagandha</i> <i>Rauwolfia serpentina</i> ^{20,35} | Reserpine | Pentobarbital, thiopental, and Phenobarbital upon the cerebral electrical activity and upon the MDAS in rabbits |
| | | Rescinnamine | New hypotensive and sedative principle |

Numerous herbs have a range of sedative actions, encompassing analgesic, hypnotic, anti-depressant, anxiolytic activities, often possessing two or more actions. They are designated generically as 'nervines' by Western herbalists. Unlike most centrally acting pharmaceutical drugs, nervine herbs are mild and gentle in activity, with complex and poorly understood multiple pharmacological effects. Currently, sedative herbs are usually used to treat moderate depression, insomnia and sleep disturbances; and to withdraw certain drugs, particularly benzodiazepenes. Infrequently prescribed herbs with sedative activity i.e. *Acorus calamus* (*Vacha*), *Papaver somniferum* (*Ahiphena*) and *Rauwolfia serpen-*

tina (*Sarpagandha*) have a side effect.³³ So, these plants should be used judiciously.

Acharyas of *Ayurveda* suggested herbs like *Bijapoor*, *Kakajangha*, *Apmarga*, *Kokilaksha*, *Kantakaridwaya*, *Vasa*, *Kakamachi*, *Punarnava* etc., for treatment of *Anidra*, but experimentally these herbs are not evaluated. These herbs which unevaluated for sedative activity may have a potential activity.

Clinical trials on *Anidra* (insomnia)

1. In one of the studies, conducted on 30 clinically diagnosed patients of *Anidra* (insomnia) to evaluate the efficacy of *Shirodhara* (Oil Dripping on head) and *Tab. Insomrid* (herbal formulation

containing *Ashwagandha*, *Sarpagandha*, *Jatamansi*, *Parsika-yavani* and *Tagara*) in the management of *Anidra* (insomnia), it was observed that the patients treated with *Tab. Insomrid* and *Shirodhara* combined with milk showed highly significant improvement, and patients treated with *Shirodhara* and *Tab. Insomrid* individually also showed significant improvements. No adverse effects were noted in any of the patients during the trial period.³²

2. There are several studies³⁴ performed on the use of Valerian (*Tagara*) for insomnia. It has a supportive role in chronic insomnia, especially in the elderly population. Valerian has profound beneficial effects on sleep architecture, meaning it increases deep sleep, which is necessary for growth hormone production and body repair.

3. *Guda Pippalimoola Yoga* (root of *Piper longum* with jaggery) with milk as *anupana* along with *Nidrajanaka* diet regimen is found to be very effective in managing Primary insomnia.³⁷

4. The combined therapy of *Apamargadi Vati* (a classical formulation of *Anidra* mentioned in *Harita Samhita* containing *Apamarga*, *Kokilaksha*, *Kakajangha* and *Bakuchi*) and *Shirodhara* of *Kshirabala Taila* had shown 62.5% improvement of sleep. Combined therapy proved better than other individual therapies with 100% relief in sleep time, 89.50% relief in sleep quality and 95.27% relief in mood after awakening.³⁸

5. Another clinical study indicated that *Shirobasti* (oil is made to stand over the scalp for a prescribed time) with *Tungadrumadi-taila* (mentioned in *Sahasrayoga/Tailaorakarana/43*) is having significant role in relieving the symptoms of *Nidranasha* like *angamarda*, *shirogourava*, *jadya*, *glani*, *bhrama* etc.³⁹

6. *Dashamoola Shirodhara* was found better in increasing sleep time, sleep quality and freshness after awakening while *Mamsyadi Ghrita* provided better relief in sleeplessness and distress. 15% patients of *Anidra* were markedly improved by *Mamsyadi-ghrita* whereas 25% patients had marked improvement by *Shirodhara*.⁴⁰

7. *Tagaradi Kwatha* (decoction of *Tagara*, *Shankhapushpi*, *Brahmi*, *Musta*, *Aswagandha*, *Jatamansi*, *Munnakka*, *Raktachandana*, *Parpataka*, *Kutaki*, *Dashmula* and *Amaltasa*) and *Shirodhara* of *Mahisha* milk provided highly significant relief on symptoms: sleeplessness, freshness after awakening and sleep time.⁴⁶

Most of the clinical studies conducted on insomnia, revealed that the *Shirodhara* and herbal formulations, both improved patients individually, but its combined use enhanced the effect therapeutically. This observation also supports the classical phenomenon mentioned by *Acharyas*, in the form of holistic management of *Anidra* i.e. combination of specific procedure, herbal formulation and proper diet regimen. Among the single herbal formulations mentioned by *Acharyas*, *Aswagandha* and *Pippalimoola* have been evaluated experimentally as well as clinically, but *Bijapoor* leaf is yet to be evaluated. So, researcher can study on this potential plant to evaluate its sedative activity and its effect on insomnia. *Tab. Insomrid* and *Tagara Kwatha* are not classical herbal formulations, but it designed basing on the properties and activities of reported herbs. Thus, basing on *Rasapanchaka* (pharmacodynamics and kinetic principles), *Karma* (therapeutic actions) and scientific activities and safety profile of herbs, new formulations can be also designed for insomnia.

CONCLUSION

Insomnia has been considered as a psychosomatic disorder by ancient *Acharyas* in which psyche is vitiated by aggravated *Vata-dosha*. Hence, *Acharya Charaka* stressed *Vatahara* management in *Anidra*. Avoidance of causative factors, relaxation techniques along with other therapies is the mainstay of treatment for insomnia. In view of this, *Manaha-sukham* (happiness of mind), *Manonukula-vishaya* (objects which pleasant to mind) etc., are mentioned in management of sleeplessness, which are indicative of psychic management.

Many drugs which are used classically for *Anidra* like *Bijapoor*, *Kokilaksha*, *Apamarga*, *Kantakari* etc., are not evaluated experimentally as well as clinically. Moreover, *Sarpagandha*, *Aswagandha*, *Jatamansi*, *Tagara*, *Pippalimoola* etc., drugs are scientifically evaluated for their sedative activity, but very limited clinical data is available on them. So, more experimental and clinical studies on these classical as well as scientifically reported drugs should be conducted basing on *Ayurvedic* concept of management for evaluated safe, effective therapy for psychosomatic disorder insomnia.

REFERENCES

1. Agnivesha, Charaka, Dridhabala, Charaka Samhita, ed. Vd. Jadavaji Trikamaji Acharya, Chaukhambha Surabharati Publications, Varanasi, 2008; 74, 113, 118, 119,
2. Lawrence Epstein, Steven Mardon, The Harvard Medical School Guide To A Good Night's sleep. McGraw-Hill eBooks; 2007. p. xiii.
3. Kristen L. Knutson, "Does inadequate sleep play a role in vulnerability to obesity?" The American Journal of Human Biology, Wiley-Blackwell, January 2012, DOI: 10.1002/ajhb. 22219

4. Health system performance assessment, world health survey 2003, India, International Institute for Population Sciences (IIPS) Mumbai & WHO-India-New Delhi, 2006. p.153.
5. Charles R. Craiq and Robert E. Stitzel; Modern Pharmacology with Clinical Applications, Sixth Edition, Lippincott Williams & Wilkins, 2004, chapter-30; Sedative-hypnotic and anxiolytic drugs; 357-360.
6. Sushruta; Sushruta Samhita, ed. Vd. Jadavji Trikamaji Acharya, 8th edition, Chaukhambha Orientalia, Varanasi, 2007; 358-359,
7. Vriddha Vagbhata, Ashtanga Samgraha, ed. K.R. Srikantha Murthy, Chaukhambha Orientalia, Varanasi 2005; 204-208
8. Vagbhata; Ashtanga Hridaya, ed. Pt. Hari Sadashiva Shastri, Chaukhambha Surbharati Prakashana, Varanasi, 2010;140-143
9. Shangadhar; Shangadhara Samhita, ed. Sailaja Shrivastav, Chaukhambha Orientalia, Varanasi, 2011; 288
10. Bhavamishra; Bhavaprakasha including Nighantu portion, ed. Shi Brahmasankara Mishra and Sri Rupalalaji Vaisya (First Part), Chaukhambha Sanskrit Sanshan, Varanasi, 2004:150
11. Harita; Harita samhita, ed. Jaymini Pandey, Chaukhmbha Visvabharti, Varanasi, 2010, p. 346
12. Govindadas Sen; Bhaishajya ratnavali, ed. siddhinandana mishra, chaukhambha surbharati prakashana, Varanasi, 2011; 491-2.
13. Bapalal Vaidya; Adarsha nighantu, Vol. 2, Chaukhambha Bharti Academy, Varanasi, 2005; 137, 330, 226, 359.
14. Sukha Dev; A Selection of Prime Ayurvedic Plant Drugs Ancient-Modern Concordance. Anamaya Publishers, New Delhi 2006. p. 313,319, 437, 447.

15. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 1, CCRAS, Dept. of Ayush, Govt. of India, 2004; p. 81,266,292,406,471
16. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 2, CCRAS, Dept. of Ayush, Govt. of India, 2004; p. 283,295,381,428
17. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 3, CCRAS, Dept. of Ayush, Govt. of India, 2004; p. 92,406
18. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 4, CCRAS, Dept. of Ayush, Govt. of India, 2004; p. 2008;216,472,486
19. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 5, CCRAS, Dept. of Ayush, Govt. of India, 2004; p. 190
20. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 7, CCRAS, Dept. of Ayush, Govt. of India, 2007; p. 138,389,436,455
21. Anonymous; Database on Medicinal Plants used in Ayurveda & siddha vol. 8, CCRAS, Dept. of Ayush, Govt. of India, 2007; p. 7,175
22. Anonymus; Reviews on Indian medicinal plants, vol. 1, ICMR, New Delhi, 2004; p. 200, 392
23. Anonymus; Reviews on Indian medicinal plants, vol. 2, ICMR, New Delhi, 2004 p. 139, 238.
24. Anonymus; Reviews on Indian medicinal plants, vol.3, ICMR, New Delhi,2004; p. 8, 119, 153, 353
25. Anonymus; Reviews on Indian medicinal plants, vol.4, ICMR, New Delhi, 2004; p. 11-15, 353
26. Anonymus; Reviews on Indian medicinal plants, vol.5, ICMR, New Delhi, 2007; p, 146, 368, 592, 703, 830, 893, 922-5
27. Anonymus; Reviews on Indian medicinal plants, vol.6, ICMR, New Delhi, 2008; p. 423
28. Anonymus; Reviews on Indian medicinal plants, vol.7, ICMR, New Delhi, 2008; p. 123, 524, 178
29. Anonymus; Reviews on Indian medicinal plants, vol.8, ICMR, New Delhi, 2009; p. 564, 663
30. Anonymus; Reviews on Indian medicinal plants, vol.9, ICMR, New Delhi, 2009; pp. 222,273,563
31. Anonymus; Reviews on Indian medicinal plants, vol. 10, ICMR, New Delhi, 2011; p. 221
32. S. Pokharel, A.K. Sharma; Evaluation of Insomrid Tablet and *Shirodhara* in the management of *Anidra* (insomnia) Ayu Journal. 2010; 31(1): 40–47
33. file:///D:/for%20synopsis/sadative/Sedative%20Herbs.htm accessed on 12.05.2013
34. Venkatesh A; Use of Ayurvedic principles, Yoga, meditation, for addressing insomnia/sleep Disorders. 2010. available on www.chopra.com
35. F Rinaldi, HE Himwich, a comparison of effects of reserpine and some barbiturates on the electrical activity of cortical and subcortical structures of the brain of rabbits, Annals of the New York Academy of Sciences, 1955 (61); 27–35, and M.W. Klohs, M.D. Draper, F. Keller; Alkaloids of rauwolfia serpentina benth. iii. rescinnamine, a new hypotensive and sedative principle *J. Am. Chem. Soc.*, 1954, 76 (10), 2843
36. Okulicz-Kozaryn et al.; The effects of midazolam and morphine on analgesic and sedative activity of ketamine in rats. *J Basic Clin Physiol Pharmacol*. 2000;11(2):109-25
37. Kavitha S; A conceptual study of Nodranasha with a comparative study of diet and Guda Pippalimoola Yoga in Primary

- insomnia, (MD thesis) Govt. Ayurveda Medical College, Mysore, 2010; 177
38. Nirmal Dhamini; Role of Manasa Bhavas in Anidra and its management with certain indigenous drugs and Shirodhara, (MD thesis), IPGT & RA, Jamnagar, 2004; 143-7
39. Muralidhar. P.; The Effect of Shirobasti in the Management of Nidranasha with Special reference to Primary insomnia - An observational study (MD thesis), Government Ayurveda Medical College, Mysore 1999
40. Anil Kumar Singh; A clinical study of manasika bhavas in anidra w.s.r to stress induced chronic insomnia and its management with mamsyadi ghrita and dashamula kwatha shirodhara, (MD thesis), IPGT & RA, Jamnagar, 2007; 204-9
41. Gayasuddin, Parvez, Iqbal, G.Venkataiah; Effect of ethanolic extract of piper nigrum l. fruits on midazolam induced hypnosis in rats. International Journal of Pharmacology & Toxicology 2013; 3(1), 5-8
42. Ganeshchandra, Vikram S., Veena K., Sanjay B.; Behavioural actions of *Myristica fragrans*, Indian Journal of Pharmacology 2001; 33: 417-24
43. W.D. Ratnasooriya et al.; Sedative effect of Hot flower Infusion of *Nyctanthus arbo-tristis* on Rats. Pharmaceutic Biology, 2005, vol 43,(2), 1-7.
44. Joan T. Pickens; Sedative activity of cannabis in relation to its trans- tetra hydro cannabinol and cannabidiol content, Br. J. Pharmac. (1981), 72, 649-56.
45. Sushma, Sangeeta, Gambhir; *Centella asiatica* : a concise drug review with probable clinical uses Journal of Stress Physiology & Biochemistry, 2011; 7(1) 38-44
46. Bina H. Vansh; A clinical study on mansika bhavas in anidra w.s.r. to stress induced insomnia and its management with Tagaradi kwatha & Mahishi dugdha Shirodhara, (MD thesis), IPGT & RA, Jamnagar, 2008; p.179, 182
47. Rucker G et al.; Isolation and pharmacodynamic activity of the sesquiterpene valeranone from *Nardostachys jatamansi* DC. *Arzneimittelforschung*. 1978; 28(1):7-13.
48. Sebastian F. et al.; Sedative and sleep-enhancing properties of linarin, a flavonoid-isolated from *Valeriana officinalis*, *Pharmacology Biochemistry and Behavior* 2004; 77(2): 399-404

CORRESPONDING AUTHOR

Dr. Kalpesh panara
PhD Scholar of Dravyaguna
IPGT&RA, Gujarat Ayurveda University
Jamnagar, Gujarat, India
Email: kbpanara@gmail.com

Source of support: Nil

Conflict of interest: None Declared