



Review Article

A SCIENTIFIC REVIEW ON NIDRAJANANA (HYPNOTIC) DRUGS IN AYURVEDA

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ABSTRACT

Ayurveda became gradually acceptable globally due to its holistic approach. Its primary objective is to promote and preserve physical & mental health. For achieving this goal ancient *Ayurvedic* scholars has given prime importance to *Nidra* (Sleep) which is mentioned under *Tryopasthambha* (three pillars of life). A well modulated sleep pattern surely brings delight and longevity to the person. *Acharya Charaka* has opined 'who knows well about natural sleep, insomnia and over sleep along with the causes and treatment, is *Pranabhisara Vaidya* (Ideal Physician). At present sleep and sleep disorders became a global problem due to lifestyle modification. It is responsible for many kinds of physical, mental and social demolition. Hence it seeks to locate the cause of the sleep issues and address them with natural *Ayurvedic* healing practices. Therefore it's become obligatory to obtain a proper knowledge of *Ayurvedic Nidrajanana* drugs. Sleep and sleep disorders are complex phenomenon till now various researches are going on to understand the sleep, sleep disorder and mechanism of action of inducing agents. In present study an approach has taken to find out the mechanism of action of *Ayurvedic* sleep inducing agents. The Study found out a relation between *Oja* (vitality) and sleep. The sleep inducing agents are enhancing the stability of *Oja* (vitality) which is ideal and may be a preferable sleep inducing agent. Further study is required in this regard.

INTRODUCTION

Ayurveda is not merely a system of medicine rather it is the way of life. It includes physical, mental and spiritual well being. Its primary objective is to promote and preserve physical & mental health^[1]. For achieving this goal ancient *Ayurvedic* scholars have given prime importance to *Trayopasthambhas* (Three Pillar of life) which is composed of *Aahara* (Nutrition), *Nidra* (Sleep) and *Brahmacharya* (Abstinence)^[2]. Here *Acharayas* have given a leading importance to *Nidra* (Sleep) akin to *Ahara* (Diet) and followed by *Brahmacharya* (Abstinence). Each one of these three pillars deserves due importance because these factors are concerned with the basic needs of living system. Over indulgence or total abstinence of any of these may be harmful to life^[3]. Hence one should apply rational thought as well as scientific knowledge while designing one's own lifestyle. *Acharya Charaka* has mentioned the signs of *Pranabhisara Vaidya*, along with so many other things - one who knows well about natural sleep, insomnia and over sleep along with the causes and treatment, is *Pranabhisara Vaidya* (Ideal Physician)^[4].

According to *Atreya samhita* every presence and absence of life depends on the management of sleep pattern. A well modulated sleep pattern surely brings delight and longevity to the person^[5]. In the present scenario 20-30% of world's population is suffering from insomnia which is a key contributor to complaint like obesity, diabetes and heart disease^[6]. Patients suffering from chronic insomnia usually have reduced mental capacity, low mood and impaired performances that have implications for their family and surroundings also^[7]. They also have a higher rate of accidents, suicide, depression, anxiety and disorders of the immune system. Thus it seeks to locate the cause of the sleep issues and address them with natural *Ayurvedic* healing practices. Therefore to serve the people through the holistic approach of *Ayurveda* it's become obligatory to obtain a proper knowledge of *Ayurvedic Nidrajanana* drugs. On this background the present study was under taken and an approach was taken to find out the mechanism of action of *Ayurvedic* sleep inducing agents.

Methodology: Textual resources have been scientifically analyzed in present study. *Ayurvedic* classical texts as well as modern text books with relevant topic have been studied out.

Brief concept of Nidra (Sleep) in Ayurveda

According to *Ayurvedic* philosophy, there are four *Avasthas* (states) of mind and *Atma* (soul). Foremost state is *Jaagravastha* (the person is able to perceive subject). Next state is *Svapnavastha* (person experiences some feelings depending upon what he has done or perceived before). After that state of *Sushuptiavastha* (only the life sustaining vital functions are relics). At last *Tureeyavastha* (this is experienced only by *yogis*, the person has full control over his sleep). In the stage of *Nidra* (sleep), both the *Svapnavastha* and *Sushuptiavastha* are included. *Yogashastra* has mentioned “*Abhaava pratyayaalambanaavrtti nidra*” (*Yogashastra*) i.e. Sleep is the function of mind which blocks all the perception done by the mind. At the time of sleep mind is subjected to the feeling from inside i.e. from the mind itself. *Charaka Acharya* has opined *Nidra* (sleep) is a special state of mind in which the mind is not associated with any type of *Indriyas* (sense organ). This detachment from the *Bahya vishaya* (outer matter) is resulted from the tiredness of body as well as mind. *Kapha dosha* (one of the basic humor of body) and *Tamaguna* (one of the basic humor of mind) are responsible for *Nidra* (sleep)^[8]. According to *Susrutacharya*, the *Nidra* (sleep) occurs when the

Chetanaasthaanam (place of sense) i.e. *Hridaya* (heart) is covered by *Tamaguna* (quality of mind). *Tama aadhikya* of night contributes to the *Nidra* as it is *Tamamoola* and *Tamamayi* (origin and made up by ‘Tama’). In addition when the mind becomes *Tamaadhika* (covered by *Tama*) or body becomes *Kaphaadhika* (which is the bodily counterpart of *Tamaguna*), *Indriyas* (sense organ) become inactive and sleep occurs^[9]. *Acharyas* has mentioned *Nidra* is one among the 13 *vegas* (urges). The *Dhaarana* of *Nidraavega* (suppression of urge of sleep) may cause several harmful effects in the body. There are two types of sleep habits which are described as totally unhealthy in nature. They are ‘*Divasvapna*’ (day sleep) and ‘*Ratrijaagarana*’ (awaking at night). In *Yogaratanakara*, it is mentioned that, the patient who gets sound sleep, who feels lightness in the body and whose sense organs work properly will not deteriorate from the present health condition. (*Yoga Ratnakar Purbardha*-51).

Types of Nidra (Sleep)

According to *Charakacharya* as well as *Vaagbhatacharya*, there are 7 types of *Nidra* ^[10]. But *Susrutacharya* has mentioned 6 types of *Nidra*. Among these 7 types of *Nidra* the *Paakrtika nidra* (natural sleep) is the only desirable one. It is also called ‘*Bhoothhaatri*’ as it fosters the living things as their mother ^[11]. The *Taamasa nidra* is the worst as it is the root cause of each and every sin. The remaining 5 reveal the unhealthy state and they should be regarded as diseases.

Table1: Types of Nidra in Ayurveda

Broad Type	Charaka	Sushruta	Vaagbhata
i.Svabhavika (natural)	i. Tamabhava Nidra	i. Vaishnavi	i. Tamabhava Nidra
ii.Asvabhavika (abnormal)	ii.Sleshma Samudbhava Nidra	ii. Taamasi	ii.Sleshma Samudbhava Nidra
	iii.Manah Shrama Sambhava Nidra	iii. Vaikaariki	iii.Manah Shrama Sambhava Nidra
	iv.Sharira Shrama Sambhava Nidra	iv. Nidra in tama guna individuals	iv.Sharira Shrama Sambhava Nidra
	v. Agantuki Nidra	v. Nidra in raja guna individuals	v. Agantuki Nidra
	vi. Vyadhyanuvaritini Nidra	vi. Nidra in satva guna individuals	vi. Vyadhyanuvaritini Nidra
	vii.Ratri Svabhava Prabhava Nidra		vii. Ratri Svabhava Prabhava Nidra

Brief concept of Anidra (Insomnia) in Ayurveda^{[12],[13],[14]}

Anidra or *Nidranasha* (Insomnia) is considered under *Vataja Nanatmaja roga*. Even though, it is *Vataja Vikara*, in the pathogenesis of *Anidra*, the *Manasika Dosha Rajas* plays an important role. Broadly, the etiological factors of *Anidra* (Insomnia) can be categorized in two headings, viz. *Sharirika* (Physiological) and *Manasika* (Psychological). The former category comprises *Shodhana atiyoga* (excessive purification therapy), *Upavasa* (excessive fasting), dietary articles and routine activities causing

Vata-pitta vitiation etc. On account of mental dispositions such as *Chinta* (upset), *Krodha* (anger), *Bhaya* (fear) and *Shoka*(sadness), *Vata Prakopa* takes place in addition to the physical factors. The *Vata* vitiation occurs, due to both kinds of etiological categories. Fundamental functions of *Vata*, in connection with mental operations are *Pravartakaha* (Activation), *Niyanta* (Controlling) and *Preraka* (Motivation). These basic functions are impaired, while *Vata* aggravation takes place, as an upshot *Anidra* (insomnia) take place.

Critical analysis on 'Nidrajanana' drugs

According to Ayurvedic classics in the treatment of *Anidra* (Insomnia), one should depend upon the measures having *Vatashamaka*, *Vedanashamaka* and *Roga Nivaraka* effects as well as pacifying effects on mental activities. The treatments which are described for *Anidra* in Ayurvedic *Samhitas* are mostly same. It is described in the form of *Ahara* (diet), *Vihara* (life style), medicine and *Panchakarma* [10],[12],[14]. There is no direct existing reference regarding the mode of action of *Nidrajanana* drugs but ancient Ayurvedic scholars had mentioned it scientifically in different contexts. While describing the *Oja* (vitality), *Acharyas* were mentioned "*Oja somatmakam*" [15].

In another context *Acharya* opined that characteristics of *Kapha* like *soma* [16] and *Prakrita Kapha* is *Bala* which is similar to *Oja* (vitality) [17]. As "*Nidra shlesma tama bhava*" [3],[9],[11], hence depletion of *Kapha* as well as *Oja* from the body may be responsible cause for *Anidra*. Hence the drugs which are having similar properties like *Oja* and *Prakrita Kapha* will be responsible for inducing natural sleep. For example milk, as it is having similar properties like *Oja*. Modern investigators also opined that intake of 1 glass milk at night before bed time will induce natural sleep [18]. *Acharyas* have mentioned the *Mahisa Kshiram* (Milk of buffalo) as a best *Nidrajanana dravyam* [19]. Reason behind it is *Tama guna* predominance and also the *Guru*, *Snigdha*, *Madhura*, etc properties which are absolutely similar to properties of *Oja* [20]. On the other hand *Madakari dravyas* (narcotic drugs) like *Bhanga*, *Ahiphena* etc are also capable of producing sleep. While describing *Madakari Dravyas* (narcotic substances) *Acharya Sharangadhara* has given the definition "*Buddhim lumpati yat dravyam madakaari taducchyate tamo guna pradhanam cha yathaa madyam suraadikam*" (*Sha.Sam.Poo-4/21*). *Madakari dravyas* are *Tamaguna* predominant responsible for decreasing intellectual power. They are composed of *Laghu* (light), *Ruksha* (rough), *Teekshna* (sharp), *Ushna* (hot) etc properties which are totally opposite of properties of *Oja* [20]. It may indicate *Madakari dravyas* are producing sleep by displacing *Oja*, which is not predictable in body. *Acharyas* have included this type of *Nidra* under *Vaikariki Nidra*. Conventional *Nidrajanana* drug would fabricate sleep without disturbing *Oja* and its properties would be similar like *Oja*. May be for that reason *Acharyas* have advised *Shodhana* (purification) procedure of *Madakari dravyas* like *Bhanga*, *Ahiphena* by cow's milk to enhance the properties of *Oja*. How the depletion of *Oja* can produce sleep, that is clearly documented by classics while describing the 3 stages of *Oja kshaya* (*Visramsya*, *Vyapad*, *Kshaya*) [21].

In *Visramsya* stage (first stage of *Oja* depletion) generally relaxation of joints and all physical activities become diminished. In *Vyapad* stage *Acharyas* have mentioned *Nidra* as one of the symptom subsequent to *Tandra*. In *Kshaya* stage (last stage of *Oja* depletion)

fainting, delirium and also death. According to Modern Pharmacologists the drugs which are inducing sleep, in small doses, first may produce sedation, then it may bring on sleep (if potency is more) and at last if it is further potent it may produce coma or even death [22]. Hence modern sleeping pill may act like *Madakari Dravyas*. Recent study has documented *Manasmitra Vatakam* is better sleep inducing agent than clonazepam [23]. While going through the ingredient of *Manasmitra Vatakam*, most of the ingredients are having *Snigdha*, *Madhura*, *Guru*, *Sheeta* properties which are similar to the properties of *Oja*. Also *Anupana* (Adjuvant) of this medicine is milk [24] which may enhance the properties of *Oja* for inducing natural sleep.

Ayurvedic plants for inducing sleep

An assortment of numbers of plants are bear out as a good hypnotic agent. Maximum of these are commonly practiced in Ayurveda, like as- *Vacha* (*Acorus calamus* Linn.), petroleum ether extract of root and rhizome of the plant proved as hypnotic [26, 27]. *Brahmi* (*Bacopa monnieri* Linn.), alcoholic extract of the plant, in a dose of 100 mg/100g bw showed potent hypnotic effect in albino rats [28]. Wood essential oil of *Devadaru* (*Cedrus deodara* Roxb.), showed motor in coordinating activities in mice and pentobarbitone-induced hypnosis [29].

Ethanol extract of roots *Aswagandha* (*Withania somnifera* Linn.), produced sedation in mice, dogs, monkeys, rabbits and rat [30],[31]. Alcoholic extracts of *Shankhpushpi* (*Convolvulus prostratus* Forssk) showed potentiation of pentobarbitone hypnosis in rats. Plant showed maximum barbiturate hypnosis potentiating activity during spring season [32],[33]. Alcoholic extract of the stem, flowers, leaves and fruits of *Aparajita* (*Clitoria ternatea* Linn.) showed diminution of spontaneous motor activity and increase in sedation in mice, potentiation of barbiturate hypnosis in rats [34].

Essential oil from the laves of *Artabotrys hexapetalus* R.Br. showed spontaneous motor activity, pentobarbitone sodium-induced hypnosis, rota-rod performance and conditioned avoidance response [35]. Alcoholic extract of *Centella asiatica* Linn. has been reported to be tranquillizing effect in rats [36]. The juice of the leaves of *Upodika-Basella alba* L. mixed with castor oil is a useful remedy in insomnia. The juice should mix in an equal quantity of castor oil and heated to remove the watery content. It should then be cooled and stored in bottle. When the scalp is massaged with this oil before going to bed, it will induce good sleep [37]. Study also reported that *Lettuce* seed oil was found to be a useful sleeping aid and may be a hazard-free line of treatment, especially in geriatric patients suffering from mild-to-moderate forms of anxiety and sleeping difficulties [38].

Yastimadhu (*Glycyrrhiza glabra* L.) reported to have neurological properties such as antidepressant,

anxiolytic and anticonvulsant effects. The molecular structure and pharmacophore model of glabrol and liquiritigenin indicate that the isoprenyl groups of glabrol may play a key role in binding to GABA(A)-BZD receptors. The study implied that flavonoid glabrol induced sleep via a positive allosteric modulation of GABA(A)-BZD receptors^[39]. Xanthones of *Punnaga-Calophyllum inophyllum* Linn. Responsible for decreased spontaneous motor activity, loss of muscle tone, pentobarbitone sleeping time and ether anesthesia in mice and rats^[40]. Flavonoids (linarin, 6-methyl- pigenin, and (-)-hesperidin) from *Tagara-Valeriana jatamansi* Jones showed hypnotic potency in sodium thiopental-induced sleep test and hole board test^[41]. Like as the many benefits of some medicinal plants to help sleeping are now a proven fact. Studies of the effectiveness of herbs for sleep problems have not always been as thorough as they should have been. Sometimes it seems that the treatment works well, however with any new treatment it is important to check that this effect is not simply a placebo (or dummy) effect that could have occurred if a sugar pill had been taken. Many studies of herbal remedies have failed to properly compare outcomes with those from a placebo treatment.

DISCUSSION

Scientists have tried to think over the phenomena of *Nidra* from time immemorial. In Upanishad and *Ayurvedic* literature, *Nidra* is well thought-out as one of the essential function of the living organisms. Sleep is a physiological phase of 'unawakening' that exists between two phases of normal and routine awakening. It can be ascertained that, all the three psychosomatic functions of mind when impaired, restricts the attachment of *Mana* (mind) from *Indriyas* (sense organ) and seeking rest in *Nirindirya Pradesha* (*Chakrapani*), resulting the pathological state *Anidra* occurs. According to *Ayurvedic* Classics the physiological changes during sleep is best manifested in the heart. The heart (*Hridaya*) is compared with a lotus flower which blooms in the day time and withers in the night time. The body achieves the proper relaxation and rest through the sleep. The concept of *Nidra* and sleep are quite comparable. The *Nidra* is so important for the maintenance of health. This is true in the light of modern scientific knowledge also. According to *Ayurvedic* concept, the *Kapha* and *Tamas* are responsible for the *Nidra*; while the sleep production has been attributed to many factors including stimulation of certain areas of brain. *Ayurveda* classifies the *Nidra* on the basis of the mode of origin while modern classification of sleep is based on physiological variations seen in association with the different types of sleep. *Nidra* or sleep is affected by a number of factors like food, activities, external stimuli etc. Any variation in the normal sleep pattern is not at all desirable and they may cause serious health problem. In present study the critical analysis points up

Nidrajanana drugs which are inducing sleep mostly acts through two different ways. One kind of drugs which are acting by dislodging *Oja* by its opposite properties of *Oja*, these are harmful to the body and this kind of sleep is not predictable. Example of such kind of drugs are *Bhanga* (*Cannabis sativa* Linn.), *Ahiphena* (*Papaver somnifera* Linn.), *Dhatu* (*Dhatu alba* Linn.), *Sarpagandha* (*Rauwalfia serpentina* Benth ex. Kutz) etc. These drugs are having mostly *Ushna* (hot), *Teekshna* (sharp), *Ruksha* (rough) properties. Adverse effect of this kind of drugs may leave behind by application along with milk. Hence study should be conducted to drop the side effect of long time use of *Sarpagandha* by application along with milk. Another kind of drugs which are having similar properties like *Oja* are inducing sleep by nourishing the *Oja*. As nourishing of *Oja* providing *Tusti* (satiety), *Pusti* (nourishment), *Balam* (strength) in the body it may enhance the natural sleep. (Eg- Milk, *Jastimadhu* (*Glycyrrhiza glabra*), *Shankhupuspi* (*Convolvulus pluricaulis* L.), *Brahmi* (*Bacopa monneiri*) *Mandukaparni* (*Centella asiatica* Linn.).

CONCLUSION

The concept of *Nidra* and sleep are somewhat akin. The *Nidra* is so vital for the upholding of health. This is factual in the light of modern scientific data too. *Ayurveda* classifies the *Nidra* on the basis of the mode of origin while modern classification of sleep is based on physiological variations seen in association with the different types of sleep. *Nidra* or sleep is affected by a number of factors like food, activities, external stimuli etc. The *Nidrajanana* drugs which are acting by dislodging *Oja* by its opposite properties of *Oja*, these are harmful to the body. To overcome the adverse effect of such kind of drugs, can be applied along with milk. Further study should be conducted on the base of this concept.

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