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 Tryopastmbhama (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 Trayopastmbhas (Three Pillar of life) which is composed of Aahara (Nutrition), Nidra (Sleep) and Brahmacharya (Abstinence)[2]. Here Acharyas 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 Jaagravadavastha (the person is able to perceive subject). Next state is Swapnavastha (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 reliefs). 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 Swapnavastha and Sushuptiavastha are included. Yogashastra has mentioned “Abhaava pratayyaalamanaavrtti 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

<table>
<thead>
<tr>
<th>Types of Nidra (Sleep)</th>
<th>Ayurvedic</th>
<th>Scientific</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vaagbhatacharya</td>
<td>Ayurvedic</td>
<td></td>
</tr>
<tr>
<td>2. Sushruta</td>
<td>Scientific</td>
<td></td>
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<tr>
<td>3. Vaagbhata</td>
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</tbody>
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Table1: Types of Nidra in Ayurveda

<table>
<thead>
<tr>
<th>Broad Type</th>
<th>Charaka</th>
<th>Sushruta</th>
<th>Vaagbhata</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.Svabhavika (natural)</td>
<td>i. Tamabhava Nidra</td>
<td>i. Vaishnavi</td>
<td>i. Tamabhava Nidra</td>
</tr>
<tr>
<td>ii.Asvabhavika (abnormal)</td>
<td>ii. Sleshma Samudbhava Nidra</td>
<td>ii. Taamasi</td>
<td>ii. Sleshma Samudbhava Nidra</td>
</tr>
<tr>
<td>iii.Manah Shrama Sambhava Nidra</td>
<td>iii. Vaikaariki</td>
<td>iii. Manah Shrama Sambhava Nidra</td>
<td></td>
</tr>
<tr>
<td>v.Agantuki Nidra</td>
<td>v. Nidra in raja guna individuals</td>
<td>v. Agantuki Nidra</td>
<td></td>
</tr>
<tr>
<td>vi.Vyadhyanuvartini Nidra</td>
<td>vi. Nidra in satva guna individuals</td>
<td>vi. Vyadhyanuvartini Nidra</td>
<td></td>
</tr>
</tbody>
</table>

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. Sharirikika (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 Prahka 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 somatamakam” [15].

In another context Acharya opined that characteristics of Kapha like soma [16] and Prakrta 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 should be responsible cause for Anidra. Hence the drugs which are having similar properties like Oja and Prakrta 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].

Acharayas have mentioned the Mahisa Kshiram (Milk of buffalo) as a best Nidrajanakam 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 Bhang, Ahipha 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 yatho madayam suraadikam” (Sha.Sam.Poo-4/21). Madakari dravyas are Tamaguna predominant responsible for decreasing intellectual power. They are composed of Laghu (light), Ruksa (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 Bhang, Ahipha 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 (Visramsa, Vyapad, Kshaya) [21].

In Visramsa 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 rhizone 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].

Ethanolic 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 hypnotic 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 (Chitorea 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 leaves 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 tranquilizing effect in rats [36]. The juice of the leaves of Upodika-Basalla 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].

Vastimadhu (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. Xanthones of Punnagacalophyllum inophyllum Linn. Responsible for decreased spontaneous motor activity, loss of muscle tone, pentobarbital sleeping time and ether anesthesia in mice and rats. Flavonoids (linarin, 6-methyla-pigenin, and (-)-hesperidin) from Tagaravaleriana Ratamansi Jones showed hypnotic potency in sodium thiopental-induced sleep test and hole board test. 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.), Ahiphenia (Papaver somnifera Linn.), Dhatura (Dhatura alba Linn.), Sarpagandha (Rauwolfia 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, Jastimadhuvagyrhiza glabra), Shankhusupsi (Convoolus 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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