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Effectiveness of Various Topical Herbal Treatments for Insomnia and Sleep Problems: A Journal Review

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ABSTRACT

Insomnia is one of the most common sleep disorders that lowers quality of life and one of the most prevalent sleep disorders, insomnia is characterized by trouble falling asleep, difficulties remaining asleep, or a lack of restorative and rejuvenating sleep.

The effectiveness of these herbal plants and other essential oils helped to improve sleep in hemodialysis patients and sativa seed oil coincides with managing sleeping disorders. Also treatment for depression due to its relaxant properties some plants have serotonin and L. tryptophan properties that may balance both sleep patterns and moods. Several topical medications that are frequently used to treat insomnia are included, along with information on their efficacy and safety in general use.

Numerous studies have found that the rate of sleep decrease in modern civilizations has dramatically increased over time in terms of both quality and length. Sleep problems are often prevalent among people and are associated with several comorbid conditions including sadness and anxiety. With a frequency of 10-15% in the general population and 30-60% in senior populations, sleep loss is one of the most common sleep disorders and has been increasingly common in modern civilizations throughout time.

An overview of the herbal topical treatments that are frequently used to treat insomnia is what this study aims to do. The study focuses on lettuce, lavender, and pumpkin.

KEYWORDS: Herbal Topical Formulation, Topical Remedies, Sleeping Problems, Sleep Deprivation, Insomnia

1. INTRODUCTION

A strong quality of life and the maintenance of health depend on meeting one of our most basic requirements, which is sleep (1). An elevated arousal threshold, reversibility, and homeostatic control are a few behavioral characteristics that characterize sleep as a systemic physiological state. All animals with nervous systems and those who have been extensively examined exhibit sleep behavior. According to the theory of sleep homeostasis, animals need to sleep in order to survive, and when they don't get enough of it, bad things usually happen. Due to its significance, sleep is tightly regulated by the neurological system, and malfunctions of this system lead to diseases that are common in contemporary society (2).

Further, one of the most prevalent sleep disorders, insomnia is defined by trouble sleeping, difficulty getting asleep, or problems remaining asleep while being deprived of restorative and revitalizing sleep (2). The most prevalent forms of sleep disorder is "insomnia," which is defined by the DSM-IV criteria as difficulty falling asleep or staying asleep or a lack of reinforcing and refreshing sleep for a period of one month or more that results in individual dysfunction. Dyssomnia and parasomnia are the other two main types of sleep disorders based on the DSM-IV (2). According to projected numbers from Health Grades Inc. in 2014, the Philippines is estimated to have one of the highest rates of sleep deprivation in the world with more than 10 million adults suffering from insomnia. The inability to fall asleep or stay asleep, even when provided the opportunity to do so, is known as insomnia. For a month or more, it can happen three times each week and is accompanied by exhaustion and irritation (3). For people who have mild to moderate symptoms of anxiety and sleep difficulties, using natural remedies like herbal medications is becoming an appealing strategy to address this problem (4).

Global health discussions are paying a lot of attention to traditional herbal remedies. Traditional herbal medicines are classified by the World Health Organization as naturally occurring, plant-derived compounds that have undergone little to no industrial processing and have been utilized to treat sickness as part of local or regional healing traditions. The use of natural or herbal medicines as a form of self-treatment for various stress-related illnesses has grown in popularity over the past few years in Western nations. One of the most popular supplementary or alternative forms of treatment for insomnia nowadays is herbal medicine (5). Previous research has indicated that herbal remedies for insomnia, including violets, lilies, pumpkins, and almonds, are beneficial (2). Further, the prevalence of insomnia and its significant effect on public health are both well known (6). Therefore, insomnia negatively

affects quality of life. The focus of this review is to assess the effectiveness and security of herbal medication in enhancing quality of sleep. This review suggests that herbal remedies might be a good therapeutic choice for treating insomnia.

2. METHODS

This review study incorporates retrieved studies and peer-reviewed publications from multiple journals in Researchgate, Science Direct, Google Scholar, Pubmed, and other online research platforms. The article search started on June 20, 2022, and ended on July 10, 2022. The topics searched for were all concentrated. on herbal medicines available all over the world in topical form in treating insomnia using keywords such as Herbal Topical Formulation for Insomnias, Topical Remedies for Insomnias, Sleeping Problem Topical Remedies, Sleep Deprivation Remedies, and Insomnia Herbal Treatment. Aside from the use of those keywords, the researchers filtered their searches to articles only that were published from 2017 up to the present. The researchers were tasked with producing articles that were checked, scanned, and reduced. All journals studied were grouped systematically for simple access and for prevention of any documented contradictions. Though the articles about the topic were limited, the review was done exhaustively in order to address the different topical herbal treatments for the treatment of insomnia.

3. RESULTS AND DISCUSSION

Sleeping difficulties generally exist in numerous comorbidities such as depression or anxiety, with the manifestation of sleep deprivation. (7) In support, there is an increase of evidence towards sleep deprivation consequences wherein short sleep duration for just three days can lead to decreased functioning and increased stress, fatigue, and sleepiness. (8) Increased risk of hypertension also coincides with sleep deprivation. (9, 10) As well as coronary heart disease (CHD) (11), metabolic syndromes (12), obesity (13), type 2 diabetes mellitus (14), and a 2017 systematic study exhibited its relation to increasing mortality rate (15). Additionally, the quality and duration of sleep deprivation have been drastically increasing over the years. A study with 3,120 healthy adults in 2020 reported that 14% of the participants responded to sleep dissatisfaction while others consisting of 30%, responded to insufficient sleep. (16) Another study also shows that the United States has an increase in the adult population with sleeping hour-range of six hours or less by 31% from 1985 to 2012. (17) In China, 11% of adults have slept for only six or fewer hours a day. (18)

Furthermore, Insomnia is a common complaint among middle-aged populations due to the difficulty of maintaining and falling asleep. It is one of the most frequent sleep disorders in 60% of the elderly population, while the general population consists of 10-15%. (19) However, there are no universally recognized models for understanding the pathophysiology of insomnia. Studies have shown that it can be developed in those who are genetically susceptible, possess abnormalities in their neurobiological nature, and have increasing change factors. (20) Insomnia is generally treated with pharmacologic and nonpharmacologic methods. The pharmacologic treatment includes hypnotic medications such as melatonin receptor agonists, histamine antagonists, and benzodiazepine receptors (BZR). (21) Some specialists used BZR for over 50 years and assessed the most recommended choice. (22) But causes unwanted adverse and withdrawal symptoms strongly affecting the older population. (23) Suvorexant (Balsomra), an orexin receptor-based insomnia therapy, is also a recently approved medication with unwanted side effects. (24)

Moreover, in contrast to these oral drugs, natural-derived treatments produce fewer unwanted side effects. Results show that much evidence proves that these natural compounds are used in topical formulation to treat sleeping difficulties. An example of a natural compound is lettuce varieties. (25) Lactuca sativa, from the Asteraceae family variety of lettuce, is one of the most used and significant crops in leafy vegetables. (26) Its seed extracts are safely produced in topical oil formulation for children without side effects. A human clinical trial confirms its validity in inducing sleep but needs additional investigations in a large sample. (1) While its leaves promote sedative-hypnotic effects through properties of sesquiterpene lactones (Lactucopicrin and Lactucin). Nevertheless, another lettuce variety used in a phenobarbital-induced animal model produces healthy sleep effectivity. (27) This thought resulted in a significant improvement in sleep scores, and State-Trait Anxiety Inventory coincides with managing sleeping disorders. (28)

Another natural plant compound to consider producing excellent treatment in improving sleep and insomnia is Lavender. It is relatively safe in short-term therapy with uses that include dripping oil, bathing, and massage. Undiluted essential oil formulation is preferable for better adherence in skin application. (29) Lavender (Lavandula angustifolia) has treatment effects such as analgesic, anxiolytic, and sedative. (30) Additionally, Lavender fresh flower extract is used in a topical cream formulation through absorption in the skin without teratogenic effects. Alternatively, Both Lavender and Orange essential oils used for hemodialysis patients improved their sleep quality through foot massages. The lavender essential oil has a positive effect on both the patient's sleep and anxiety levels. However, sweet oranges initiate tranquility through sedation and massage therapy, in which lavender oil causes better results than orange. But, both their effectiveness is proven productive in hemodialysis patients. (31)

Cucurbita pepo, called pumpkin and squash interchangeably, is another natural treatment for insomnia. (32) This plant is from the Cucurbitaceae family. Its seeds produce oil and contain nutrient-rich properties such as beta-carotene, fatty acids, lutein, phytosterols, squalene, gamma, and beta-tocopherols. (33) The efficacy of pumpkin-extracted fruits and seeds is tested to have a positive sleep quality effect. Its seeds have serotonin and L. tryptophan properties that may balance sleep patterns and moods (34). While pumpkin-derived oil induces a sleeping effect in patients with existing chronic insomnia. (27) Wherein disturbed sleep leads to depression due to episodes of the compromised function of psychosocial aspects. (35) This is where pumpkin as the treatment takes place for depression-producing relaxant properties. (36)

Scientific name	Extract/plant	Study type	Outcomes	Reference
Lactuca sativa	Seeds	Randomized Double-Blind Controlled Trial	Confirmed effect of enhancing sleep	26, 1
Lavandula angustifolia	Flower	Randomized Placebo-Controlled Trial	Positive effect in improving sleep quality	30, 31
Cucurbita pepo	Seed	Doubleblind Randomized Clinical Trial	Induces sleeping effect in patients with chronic insomnia	32, 33

Table 2. Clinical and Experimental Studies of the different topical herbal remedies for insomnia and sleep problems

Furthermore, various supports the above-stated claim of botanical compounds beginning with Lettuce, wherein a study indicated that applying lettuce seed oil topically to children's foreheads before bed reduces sleep disorders, except snoring, comparable to the effects of clonidine medication. (1) On the other hand, a study also established that the effect of Lavender determines the sleep quality and exhaustion in pregnant and postpartum candidates with or without footbath. Despite its absorbance in the skin, it is not advisable to consume during pregnancy. (37)

Nevertheless, a study assessed the sleep quality of lavender using a 24-item Pittsburgh Sleep Quality Index (PSQI), a self-administered questionnaire based on a modified intention-to-treat approach excluding women with no follow-up visits based on data. (37) A study was conducted on a previously mentioned plant, Pumpkin, wherein the participants in the study by Haghjoo et al. are from a sleep clinic in Iran. The researchers used a diagnostic criterion (DSM-IV-TR) in primary insomnia to determine placebo and pumpkin oil effectivity on sleep patterns. The study used the Pittsburgh Sleep Quality Index and ISI questionnaire to assess the baseline and end of treatment. (38)

Despite the promising pharmacologic approach stated beforehand, another positive alternative is an option that utilizes botanical compounds. The approach in mind is the nonpharmacologic approach. This thought avoids adverse, withdrawal, and dependency effects of pharmacologic approach medications. An example is green tea consumption that is less likely to disrupt or ruin sleep quality, especially at night. It also improves psychomotor performance and cognitive thinking, similar to the effects of coffee. (39) But, caffeine produces addictive effects, and long-term use may lead to an increase in attaining sleep disorders. This thought proves that green tea is a better option for enhancing sleep quality and overall body health as it is relevant for managing oxidative stress and iron overload. The said benefits from green tea extracts are used in formulations by pharmaceutical companies. (40) An ointment-topical application of it in another note can also help with flaky skin by reducing it. (41) However, another study suggests that direct topically applied Capsaicin has beneficial effects that help improve sleep and lessen the tenderness. Aside from that, it benefits diabetic people with neuropathic pain by targeting nerve endings to reduce the pain. (42) Its chemical structure is the source of absorbance with 94% efficacy. (43) It is a part of many pieces of research but is widely known and utilized for pain that may vary in concentration with low or high doses to know which is most efficacious and produces fewer side effects. (44) Sleep disturbances are also associated with neuropathic pain, and at the same time, use Capsaicin for treatment. (45)

The purpose of this study is to provide an outline of herbal topical products commonly applied for the treatment of insomnia and supply evidence on the impact in terms of its effectiveness and safety in the general population. The study focuses essentially on the following plants including Lactuca sativa (Lettuce) (46), Lavandula angustifolia (Lavender) (47), Cucurbita moschata (Pumpkin) (48), Camellia sinensis leaves (Green Tea), and Capsicum annuum (Hot Pepper). Furthermore, we have also reviewed other herbal sleep aids such as Citrus sinensis (Orange) (49), Isatis tinctoria (Dyer's Woad) (50), and Avena sativa (Oat) briefly (51).

4. CONCLUSION

Based on the output of this journal it is beneficial to use botanical components that have sleep-inducing properties in order to prevent the negative, withdrawal, and dependence consequences of synthetic drugs. Thus, herbal formulations or topical versions of herbs are efficient remedies for relieving sleep problems with fewer side effects. Over the last several years, the use of natural or herbal remedies as a form of self-treatment for different stress-related disorders has gained favor in Western countries. And currently, one of the most popular additional or alternative therapies for insomnia is herbal medicine. Lavender, pumpkin, green tea, and hot peppers are just a few of the medicinal plants used to make certain topical therapies that have the potential to be used in conjunction with other treatments for insomnia.

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DISCLOSURE OF CONFLICT OF INTEREST

There is no conflict of interest from the authors.

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