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A Review of the Efficacy of Herbal Remedies for Managing Insomnia

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Abstract

Aim: The aim of this article is to review identified literature on the effectiveness of commonly used herbal remedies for insomnia. **Methods:** A search of the internet and electronic databases was conducted. **Results:** Fourteen herbal remedies were identified from the initial web search; however, only six of the fourteen websites returned any literature when combining the search terms with insomnia. One hundred and fifty-six articles were found, and 18 articles matched the inclusion criteria, while 138 articles were excluded. The literature found and reviewed by the current authors had investigated valerian (*Valeriana officinalis*) alone or in combination with other herbs, hops (*Humulus lupulus*), kava-kava (*Piper methysticum*), chamomile (*Matricaria recutita*), and St. John's wort (*Hypericum perforatum*). **Discussion:** Few studies specifically investigate the effect of commonly used herbal remedies on insomnia. Valerian alone, or in combination with other compounds, has received some research attention, whereas other herbal remedies, such as St. John's wort, chamomile, and kava-kava have received very little attention. **Conclusion:** It is surprising that herbal remedies used for insomnia and sold as over-the-counter remedies have received very little research attention. Considering the rise in the use of complementary and alternative medications, it would seem appropriate that such preparations were assessed scientifically for therapeutic potential and safety. Additional research is required to provide evidence for the effectiveness and safety of these popular herbal remedies as therapeutic agents for treating insomnia symptoms.

Introduction

Although the function of sleep is still not fully understood, there is ample evidence to indicate that sleep is vital for human functioning.^{1,2} Life is full of unexpected events that cause

people to experience the occasional sleepless night or have transient insomnia symptoms; however, when symptoms persist over a prolonged period they may make a serious impact on an individual's functioning and quality of life (QoL).³ Insomnia is a common complaint in the general population across most developed countries, with prevalence rates varying from 19% in France, 27.6% in the United Kingdom, and 21% in the United States.⁴ In Australia, the overall prevalence is similar, with an estimated 5% of the population experiencing severe chronic insomnia.⁵ For some patients, symptoms may be temporary, but for others, symptoms are frequently stable and persistent and, if left untreated, may be linked to increased morbidity,^{3,4} such as mental health problems, poor immunity, heart disease, and increased accidents.

Two standardized diagnostic criteria are used to assist diagnosing insomnia; the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition TR (DSM-IV TR)*⁶ and the *International Classification of Sleep Disorders, 2nd Edition (ICSD-2)*.⁷ The major symptom for insomnia defined by the *DSM-IV TR* is difficulty initiating or maintaining sleep or nonrestorative sleep for at least 4 weeks.⁶ Similarly, the *ICSD-2* defines insomnia as a complaint of difficulty initiating and/or maintaining sleep, waking up too early, and/or poor sleep quality for at least 4 weeks.⁷

Management of insomnia includes pharmacotherapy and behavioral intervention; however, patients also use complementary and alternative medicines (CAMs) to self-manage their insomnia. Over-the-counter (OTC) herbal remedies are used to ameliorate insomnia symptoms, and, in recent years, there has been a rise in the use of CAM.⁸ The motivation to use CAM includes being proactive in maintaining health and/or embracing a holistic approach to life.⁸

CAM is used to address a number of health problems, and one study conducted in the United States, estimated that 1.6 million people use CAM to manage insomnia.⁹ In this study, biologically based CAMs including herb-based products were found to be the most prevalent. A recent

study conducted in Australia showed that 68.9% of 1067 participants interviewed used some form of CAM¹⁰ either to promote well-being, or to manage or prevent chronic illness. Despite the traditional use of these herbal remedies, limited research was found that reports on the therapeutic benefits for managing insomnia.¹¹ Yet, herbal remedies have been reported to have fewer side-effects relative to pharmacologic interventions and may provide a natural alternative to, or adjunct therapy to, other interventions.¹²

The aim of this review is to consider the literature available related to commonly used herbal remedies for insomnia and describe the potential benefits and safety concerns.

Methods

Using the terms Insomnia, Herbal remedies, Herbal treatments, Herbs, and natural treatment the worldwide web was searched and a list of commonly cited herbs was compiled (Table 1) and included in the literature search.

Following the web search, a search of the literature was conducted in mid-2011, using the Cochrane Central Register of Controlled Trials, 3rd Quarter 2011; the Cochrane Database of Systematic Reviews, 2005–2011; Ovid MEDLINE,[®] PsycINFO,[®] PubMed, and AMED using the term Insomnia plus, as additional terms, the common names of the herbs listed in Table 1. The reference lists of relevant articles were also searched. Articles were excluded if they involved animal experiments, were in a language other than English, were published prior to 1985, or if the herbs were not ingested.

Results

The search returned 156 articles; of those, 138 articles were excluded per the exclusion criteria leaving 18 articles for the review. Although the aim was to review literature on insomnia, independent of comorbidities, and commonly used ingested herbal remedies, some research on kava-kava and St John's wort involving anxiety and menopause-related insomnia were included as no other literature was found about these two herbs. What is also of note, no literature was found about a number of the herbal remedies; thus, they were excluded from the review (Figure 1).

Valerian

Valerian (*Valeriana officinalis*) is recognized for its sedative and soothing medicinal properties and is frequently used to ease symptoms of insomnia.¹² Although the main sedative agent in valerian remains elusive, it has been suggested that valepotriates, valerenic acid, and their derivatives contribute to the sedative effect. It is possible that the pharmacologic effect of valerian is mediated through modulation of GABAergic receptor function.¹³

A systematic review conducted in 2007 concluded that, although valerian is safe, it is not effective for treating insomnia.¹⁴ However, a systematic meta-analysis¹⁵ concluded that valerian is effective for improving sleep quality.

A number of randomized, double-blinded trials have been undertaken to ascertain the hypnotic properties of valerian.

Table 1. Herbal Remedies Included in the Literature Search

Herbs	References/notes
Valerian (<i>Valeriana officinalis</i>)	16–25
Hops (<i>Humulus lupulus</i>)	See hops/valerian combination
Valerian–hops combination	26–28
Kava-kava (<i>Piper methysticum</i>)	See kava-kava/valerian combination
Kava-kava/combo	30–32
Chamomile (<i>Matricaria recutita</i>)	35
St. John's wort (<i>Hypericum perforatum</i>)	37
Lavender (<i>Lavandula</i> spp.)	Excluded—literature only available for aromatherapy
Passionflower (<i>Passiflora incarnata</i>)	Excluded—insufficient evidence
Lemon balm (<i>Melissa officinalis</i>)	Excluded—insufficient evidence
California poppy (<i>Eschscholzia californica</i>)	Excluded—insufficient evidence
Skullcap (<i>Scutellaria lateriflora</i>)	Excluded—insufficient evidence
Corydalis (<i>Corydalis ambigua</i>)	Excluded—insufficient evidence
Oat straw (<i>Avena sativa</i>)	Excluded—insufficient evidence
Vervain (<i>Verbena officinalis</i>)	Excluded—insufficient evidence
Catnip (<i>Nepeta cataria</i>)	Excluded—insufficient evidence

The results of one trial reported that valerian improved sleep structure and sleep perception,¹⁶ although there is contention about the value of valerian as a sleep aid in a clinical setting.¹⁷

Further inconsistencies in the literature are evident. One study found valerian reduced early morning sleepiness,¹⁸ whereas a randomized clinical trial conducted with 16 patients who had insomnia did not indicate any improvement in sleep following 2 weeks of treatment.¹⁹ The variation in outcomes could possibly be attributed to methodological differences between the two studies. Taibi and colleagues¹⁹ administered a single dose of 300 mg of valerian to patients 2 hours prior to sleep, whereas Donath et al.¹⁶ and Herrera-Arellano et al.¹⁸ administered 600 mg and 450 mg of valerian, respectively, to patients. According to a review, the usual therapeutic dosage of valerian is 600 mg.¹²

When comparing valerian to oxazepam, a benzodiazepine, it has been shown that 600 mg of valerian has comparable efficacy to 10 mg of oxazepam for treating nonorganic insomnia.²⁰ The results of a smaller study suggested that valerian contributed to significantly better subjective sleep quality following benzodiazepine withdrawal in valerian-treated patients, relative to controls.²¹

The effectiveness of valerian was assessed in a primary care setting in a 6-week randomized controlled study (RCT; $n = 42$) of 500 mg of concentrated valerian versus placebo. The results did not suggest any benefit from valerian, compared to placebo, for promoting sleep or improving sleep-related factors.²² In a large televised, web-based RCT of valerian for insomnia ($n = 405$), 600 mg of valerian, compared to placebo, was found to be safe, but the beneficial effects on insomnia symptoms were barely detectable.²³

Valerian has been reported to be a safe herbal supplement with relatively benign, if any side-effects. Large amounts of valerian need to be taken to produce any serious side-effects; one report that documented a deliberate overdose of 20 times the recommended therapeutic dosage noted that the patient only had minor complaints, such as tightness of the chest and mild abdominal cramps.²⁴ However, there are a few reports in the literature that challenge the perception that valerian has no side-effects, and concerns regarding potential, but rare hepatotoxicity of valerian have been reported.²⁵

Research investigating valerian and insomnia has yielded inconclusive results regarding the efficacy of this commonly available herbal remedy.

Herbal Combination Treatment

A number of studies have considered a combination of valerian and hops (*Humulus lupulus*) as a management strategy for addressing insomnia. A recent clinical trial studied the efficacy of a valerian–hops combination over a period of 4 weeks, compared to “valerian only” and a placebo in a clinical population of 30 participants diagnosed with nonorganic insomnia. The results suggested that the valerian–hops combination was significantly superior for reducing sleep latency and extending slow-wave sleep duration in patients with primary insomnia, whereas valerian

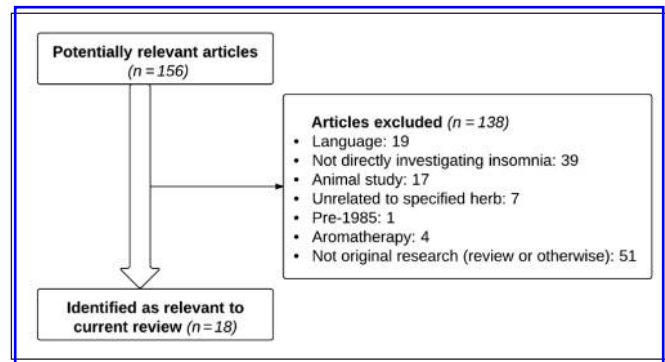


Figure 1. Review process.

alone did not improve sleep latency relative to placebo.²⁶ This finding concurs with another study²⁷ in which 30 participants who had insomnia were given a combination of valerian and hops for 2 weeks. The results indicated an improvement in sleep latency.²⁷ Similarly, results of a 4-week RCT showed that a valerian–hops combination had a modest hypnotic effect, relative to placebo, and was reported to be associated with an improvement in QoL.²⁸

Kava-Kava

The kava-kava (*Piper methysticum*) shrub originates in the Pacific islands, where it is the sole ingredient of a ceremonial tribal drink. Kava-kava is thought to have anxiolytic and sedative properties,²⁹ but no studies identified have investigated insomnia only, but rather addressed anxiety-related insomnia.

In an RCT,³⁰ 120 mg of kava-kava was administered daily over 6 weeks to patients who had stress-induced insomnia. The results suggested a statistically significant improvement in sleep latency, duration, and waking mood. Conversely, in another study, 121 participants received kava-kava three times per day for 28 days; compared to placebo, there was no reduction of insomnia symptoms.³¹ However, this study did not use standardized diagnostic criteria to establish that participants did, in fact, have insomnia and, hence, the generalizability of the study was limited.

Serious concerns relating to the safety of the therapeutic use of kava-kava have been raised including dermatologic reactions, neurologic complications, and liver damage.³² Subsequently, the U.S. Food and Drug Administration has issued an advisory statement related to the purported risk of hepatotoxicity.³³

Chamomile

Chamomile (*Matricaria recutita*) is commonly used as infusions, tablets, or oils to promote relaxation and as a sleep aid. It is generally well-tolerated. Despite the common use of chamomile to improve sleep, there appears to be limited evidence of the sedative effect of this popular herb³⁴ as only a few studies were found during the literature search. A randomized,

double-blinded placebo-controlled trial with 34 patients who had insomnia was performed. The participants were assigned to an intervention (270 mg of chamomile daily) or a control condition (matched), and were asked to complete sleep diaries once per day for 28 days to assess sleep duration, latency, efficiency, quality, and awakenings. The only reported benefit in this trial was a slight decrease in sleep latency in the treatment group, but only a marginal difference was observed.³⁵

St. John's Wort

St. John's wort (*Hypericum perforatum*) has been valued for its medicinal attributes for more than 2000 years. The traditional uses include wound healing, intestinal worms treatment, and protection against "evil spirits."³⁶ St. John's wort remains a popular herbal remedy for mood disorders and sleep disturbances, and is generally taken in the form of herbal infusions, tablets, or tinctures.³³ Most research found in this search about St. John's wort has focused on treating depression, with limited literature available about the possible beneficial effect on insomnia independent of depression. One recent study was conducted on women in midlife to ascertain the efficacy of addressing insomnia related to menopausal symptoms. The results indicated that there was a reduction of insomnia symptomology³⁷; however, this result cannot be generalized to patients with primary insomnia, without further replication and refinement of methodology.

Discussion

This review of the literature highlights the need for more research on the efficacy of the reviewed herbal remedies. In the limited studies identified, it appears that their results are inconclusive or contradictory regarding potential therapeutic benefits of these herbal remedies for managing insomnia.

Valerian alone or in combination with other compounds, appeared to have received the most attention. Nonetheless, the evidence of the therapeutic benefits of valerian for treating insomnia is inconclusive and has received criticism, as findings may be statistically significant. However, this may not translate into an efficacious treatment option for insomnia in a clinical setting.¹⁷

A number of systematic reviews fueled the debate further regarding whether or not valerian is, in fact, effective for managing insomnia. One review¹⁵ identified 16 studies examining sleep quality and the use of valerian alone or in combination with other herbs and concluded that valerian may improve sleep quality, whereas another review of 29 controlled studies¹⁴ concluded that valerian may be safe, however it is not effective as a sleep aid. Both reviews noted that there is a need for standardized methodologies and preparations, which agrees with the findings of the current review. Inconsistency in methodologies and preparations makes it difficult to draw any conclusions regarding the effectiveness of valerian as a

management strategy for insomnia without further research efforts.

Combination therapy using valerian and hops has shown some promise^{26,28} for ameliorating insomnia symptoms. However, no research was found on the effectiveness of hops alone for addressing insomnia symptoms specifically.

Using kava-kava for treating insomnia complaints has shown some potential in one study,³⁰ yet, this is also controversial, as another study showed no effect of kava-kava on insomnia symptoms. Inconsistent and scant research results, combined with safety concerns related to kava-kava use³² suggest that further research needs to be conducted for this herbal remedy to be considered for managing insomnia.

Chamomile and St. John's wort have traditionally been used to improve or facilitate sleep; yet, only a few articles were found that provided evidence to support the therapeutic use of these herbal remedies for treating insomnia.^{33,35,37}

Similarly, lemon balm (*Melissa officinalis*), traditionally used for its sedative qualities, appears to have not yet received research attention; only one study was found that alluded to the sedative properties of lemon balm.³⁸ Therefore it was not possible to ascertain the therapeutic usefulness of this herb as a treatment for insomnia. Some herbal remedies identified in the initial literature search, including passionflower (*Passiflora incarnata*) and lavender (*Lavandula* spp.), have not been investigated in relation to insomnia.

Conclusion

It is surprising that time-honored herbal remedies commonly used for insomnia and sold OTC have received very little research attention. Considering the rise in the use of CAM in general,⁸ it would seem appropriate that such preparations were assessed scientifically for their therapeutic potential and safety, especially considering the benefits that a natural-management strategy could offer patients with insomnia as an alternative to pharmacological interventions.

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Disclosure Statement

No competing financial interests exist. ■

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