Food supplements for sleep disorders: a systematic review
Guadagna S¹, Piazza R², Barattini DF¹, Rosu S³

2. Italfarmaco S.p.A., Milan, Italy.

1 - Abstract
Background: Sleep related disorders are common health issues in the general population, with a prevalence of about 30%. These conditions are associated with poor physical and psychological activity and they can result in important social, economic and personal problems. Pharmacological treatments can present significant adverse events and the use of non-pharmacological solutions in the population is increasing. To meet this need, several food supplements with different nutrients have been developed and are currently taken as sleep aids by the general public.

Study Objectives: The aim of this study is to systematically review recent literature on oral food supplements and nutraceuticals acting on sleep disorders differentiating their action on the different characteristics of insomnia: difficulty in pre-sleep arousal, maintaining sleep, quality of sleep, waking up too early.

Methods: We searched the PubMed database up to 11/02/2019 based on data from randomized, double-blind, placebo-controlled trials, non-controlled trials and cohort studies conducted in adult subjects. The search words used contained the terms: (oral food supplement) OR (oral nutraceutical) OR (oral natural products) AND (Sleep disorders) OR (Insomnia) AND “human”[Filter] AND “English”[Filter]. The most studied compounds were singled out and further analyzed with a second search using the terms: (name of the compound) AND (Sleep disorders) OR (Insomnia) AND “human”[Filter] AND “English”[Filter]. We selected 6 emerging compounds and 35 relevant reports. The review was registered on PROSPERO (International prospective register of systematic reviews), registration number CRD4201926991.

Results: Although nutraceuticals natural products have been used for sleep empirically, there is a scarcity of evidence on the efficacy of each nutrient in clinical studies. Valerian (Valeriana officinalis) and lavender (Lavandula L) were the most frequently studied ingredients and their use has been associated (with conflicting results) with anxiolytic effects and improvements in quality and duration of sleep. Unfortunately, very few studies differentiate the results of nutraceutical administration for type of sleep disorder and analyze the use of more than one nutrient in a single preparation.

Conclusions: Sleep aids based on food supplements are generally safe and well tolerated by the population. More high-quality research is needed to confirm the effectiveness of food supplements in sleep disorders; in particular, it would be interesting to evaluate the association between food supplements and sleep hygiene guidelines and to identify the optimal products to be used in specific type of sleep disorder (i.e. difficulty initiating or maintaining sleep, early morning awakening), giving more appropriate tools to the medical doctor.

Funding: Italfarmaco supported the costs for registration and participation to Vitafoods 2019.

2 - Composition of products in included articles

3 – Studies with food supplements for sleep disorders

4 – Efficacy of products on different sleep parameters

Table 2: Sleep outcomes

<table>
<thead>
<tr>
<th>Compounds</th>
<th>SL</th>
<th>WASO</th>
<th>TST</th>
<th>ODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valerian</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Lavender</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Hops</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Chamomile</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Haworth</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>St. John’s Wort</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td>Rosemary</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

5 – Conclusions

1) Occasional insomnia is a very common disturb experienced by about 30% of the general population. The use of food supplements for sleep problems is widespread and generally safe.

2) The general population and the medical community are considering the positive results obtained from non-pharmacological approaches for mild and recent sleep disorders, in particular with valerian and lavender.

3) More high-quality research is needed to confirm the effectiveness of food supplements in the different sleep disorders (initiating, maintaining and sleep quality)

6 – References

Figure 1: Flow diagram of information according to PRISMA 2009.
The search words used contained the terms: (Oral food supplement) OR (Oral nutraceutical) OR (Oral natural products) AND (Sleep disorders) OR (Insomnia) AND “human”. The most studied compounds were singled out and further analyzed with a second search using the terms: (name of the compound) AND (Sleep disorders) OR (Insomnia). We selected 7 emerging compounds and 38 relevant reports.

Conflict of interest disclosure information
PR works for Italfarmaco S.p.A., GS, BDF and RS declare they have no conflict of interest.