Abstract

The Effects of L-Theanine Supplementation on Quality of Sleep: A Systematic Review [†]

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Abstract: Background/Objectives: Sleep disturbances are considered a major public health issue due to their negative impact on overall health and the economy. There is an increasing interest in plant bioactive compounds as natural alternatives to common pharmaceutical treatment options for improving sleep quality. The green tea amino acid, L-theanine (L-THE), has been shown to induce relaxation, reduce stress, anxiety, and depressive symptoms by influencing the several neurotransmitters associated with the sleep–wake cycle. Therefore, the aim of this systematic literature review was to evaluate the effects of L-THE consumption on sleep quality in humans. Methods: Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines, systematic literature searches were conducted in six electronic databases (PsycINFO, CINAHL, Web of Science, Medline, Scopus, and Cochrane Central Register of Controlled Trials). This systematic literature review was pre-registered with the international prospective register of systematic reviews PROSPERO (CRD42022304635). Results/Discussion: In total, eleven journal articles were identified that met the inclusion criteria where L-THE supplementation (alone or in combination with other bioactives) was compared to the supplementation of a placebo (or comparator) for the treatment of sleep disturbances. The duration of treatments varied from one day to eight weeks. The majority of the included studies were conducted in adults (n = 373) while two studies were completed in children (n = 107). Improvements in several sleep parameters were observed including sleep onset latency (7), total sleeping time (2), sleep duration (2), sleep efficiency (2), overall sleep quality (5), daytime dysfunction (2), early awakenings (1), morning sleepiness (3), the use of sleep medication (1), and sleep disturbances (4) (All p's < 0.05). The findings indicate that L-THE (50–655 mg) may be effective at improving sleep quality either as an individual supplement or in combination with other bioactives. Furthermore, the treatment of sleep disturbances with L-THE at doses higher than 655 mg may not be beneficial and may be detrimental to overall sleep quality. Conclusion: The findings of this systematic literature review indicate promising effects on the use of L-THE in the management of sleep disturbances and highlight the need for further studies to determine if there is an optimal concentration of L-THE for improving sleep.

Keywords: sleep; L-theanine; green tea; nutraceuticals