

Review: oral melatonin reduces jet lag in air travellers

Herxheimer A, Petrie KJ. *Melatonin for preventing and treating jet lag*. *Cochrane Database Syst Rev* 2001;(1):CD001520 (latest version 22 Aug 2000).

QUESTION: In people who travel by air across several time zones, can oral melatonin prevent or treat jet lag?

Data sources

Studies were identified by searching the Cochrane Controlled Trials Register, Medline, EMBASE/Excerpta Medica, and PsycLIT with the terms melatonin, jet-lag, jet lag, aviation, air travel, and airtravel. SciSearch was also accessed, 2 journals (*Aviation, Space and Environmental Medicine* and *Sleep* from 1986–99) were hand searched, bibliographies of relevant studies were scanned, and authors of studies were contacted to identify further studies. Data and case reports of adverse effects of melatonin were also sought.

Study selection

Randomised controlled trials were selected if airline passengers, airline staff, or military personnel were studied; oral melatonin was compared with placebo or other medication; drugs were taken before, during, after, or a combination of times related to travel; and outcome data were provided.

Data extraction

Data were extracted on study quality and participants, timing and dose of melatonin and other study medications, flight information, and outcomes of subjective ratings of jet lag and its components (fatigue, daytime tiredness, onset of sleep at destination, onset and quality of sleep, psychological functioning, duration of return to normal, and measures indicating the phase of circadian rhythms).

Main results

10 trials met the inclusion criteria; 1 was not used in the analysis because the design was weak. All compared melatonin with placebo in adults. Melatonin was taken at the same clock time after arrival at the destination (close to bedtime at the destination). All trials were of treatment longer than 2 days; none examined shorter duration of treatment. All 9 trials individually showed a reduction in symptoms of jet lag. Meta-analysis of 5 trials showed that the weighted mean decrease in the global rating scale (range from 0, no jet lag, to 100, maximum jet lag) was 38 (95% CI 35 to 40) favouring melatonin. Studies comparing melatonin taken both before and after travel with melatonin taken after travel showed that the before and after treatment had no benefit over only taking melatonin after arrival. 1 study showed that jet lag was worse after eastward flights than westward flights. Both passengers and airline staff experienced benefits with melatonin. Daily doses between 0.5 and 5 mg were similarly effective, except that on the higher dose, study participants fell asleep more quickly and reported better sleep quality. Doses above 5 mg did

not appear to be more effective. Slow release melatonin in a 2 mg dose was relatively ineffective. Few adverse effects occurred in healthy adults.

Conclusion

Short term use of oral melatonin reduces jet lag in healthy adult air travellers and has few adverse effects.

COMMENTARY

Herxheimer and Petrie have been thorough about retrieval of relevant studies, have extracted data reliably, and have analysed data using recommended methods. They have included results from the most trustworthy clinical research design for determining if melatonin (rather than some other factor) is responsible for the decrease in reported symptoms of jet lag; thus, we can have confidence that melatonin is effective for decreasing symptoms of jet lag in adults.

The generalisability of systematic reviews is always limited by the specific purpose and nature of studies available for synthesis. This review summarises scientific evidence about the short term use of melatonin for prevention and treatment of jet lag only. It cannot be used to support the long term use of melatonin to manage ongoing circadian rhythm disruption or the use of melatonin to treat sleep wakefulness problems in other populations such as shift workers or those with insomnia. Most of the participants in the studies were healthy adults; thus, review results cannot guide practice for travellers who are children, adolescents, elderly, or adults with specific health problems.

Although the evidence is strong that use of melatonin improves jet lag, other factors affect circadian rhythm entrainment in new time zones. Nurses should consider including information about melatonin's effectiveness as part of a broader sleep education programme that includes various research based strategies for managing jet lag.¹ The strategies can be used alone or with melatonin as the traveller chooses. Although side effects are rare for healthy travellers, those with epilepsy and those taking anticoagulants should avoid melatonin. Also, nurses should make it clear to travellers that, although 2–5 mg of melatonin at bedtime for the first 3–5 nights in the new location is probably safe, precise dosing recommendations are not available, the quality of melatonin is not regulated, and it is unavailable in some countries because of licensing restrictions.

Judith A Floyd, RN, PhD
Associate Professor of Nursing
Wayne State University
Detroit, Michigan, USA

1 Arendt J, Stone B, Skene D. Jet-lag and sleep disruption. In: Kryger MH, Roth TR, Dement WC. *Principles and practice of sleep medicine*. Third edition. Philadelphia: Saunders, 2000:591–9.

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For correspondence:
Dr A Herxheimer, UK
Cochrane Centre, 9 Park
Crescent, London
N3 2NL, UK. Fax +44
(0)208 346 0407.

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