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**Melatonin's actions are not limited to sleep**

Venaki E *et al.* Melatonin and prolactin

## **Abstract**

Melatonin is widely available as a supplement, usually for sleep disorders. The consumption of melatonin supplements has increased considerably in recent years. An overlooked aspect of melatonin's administration is the resulting increase in prolactin secretion, *via* its action on hypothalamic dopaminergic neurons. We believe that since the effect of melatonin on prolactin is tangible, the laboratory finding of hyperprolactinemia could be encountered more often, given the increase in melatonin's use. This is an issue that merits further study.

**Key Words:** Melatonin; Sleep; Prolactin; Human; Dopamine; Side-effects

Venaki E, Koukkou E, Ilias I. Melatonin's actions are not limited to sleep. *World J Exp Med* 2023; In press

**Core Tip:** Melatonin, although being an active hormone, is widely available as a supplement. The consumption of melatonin supplements has increased considerably in recent years. Melatonin may increase prolactin. The laboratory finding of hyperprolactinemia could be encountered more often, given the increase in melatonin's use.

## **TO THE EDITOR**

Melatonin, although being an active hormone, is widely available as a supplement<sup>[1-3]</sup>. It is taken to treat sleep disorders/insomnia, for adults usually at doses ranging from 0.5 to 6.0 mg at bedtime, with reported various degrees of effectiveness<sup>[4]</sup>. Other potential beneficial effects of melatonin include the prevention of delirium in hospitalized patients and - still at the experimental stage - restorative action on the cirrhotic liver<sup>[5,6]</sup>. Very recently, melatonin, given at 5.0 mg at bedtime in healthy older adults was considered to be effective in increasing sleep time and efficiency<sup>[7]</sup>.

The consumption of melatonin supplements has increased considerably in recent years, as shown in studies in the United Kingdom and the United States<sup>[1,2]</sup>. In the United States, in the years 1999-2000, 0.4% of the population were taking melatonin, whereas in 2017-2018, this percentage rose to 2.1%<sup>[1]</sup>. An overlooked aspect of melatonin's administration is the resulting increase in prolactin secretion, *via* its action on hypothalamic dopaminergic neurons<sup>[8,9]</sup>. The relevant studies date to the previous century and in the most recent ones, melatonin given at a dose of up to 5 mg at bedtime quadrupled acutely prolactin levels compared to baseline<sup>[8,9]</sup>.

Hyperprolactinemia is not uncommon, especially in women with polycystic ovaries syndrome, pituitary adenomas, hypothyroidism, macroprolactinemia, or therapy with hyperprolactinemia-inducing medications<sup>[10]</sup>. Interestingly, and despite the known action of melatonin on prolactin, melatonin use is not usually included among the drug-induced causes of hyperprolactinemia<sup>[11]</sup>.

Based on the above, we believe that since the effect of melatonin on prolactin is tangible, the laboratory finding of hyperprolactinemia could be encountered more often, given the increase in melatonin's use. This issue merits further study, because the caveat is that the available literature has honed on acute effects of melatonin on prolactin. Thus, the effects of chronic use of melatonin on prolactin are obscure. These could be assessed initially in a simple manner: In subjects with hyperprolactinemia, medical history could query on the administration of melatonin. A further step could be a prospective study in subjects that commence melatonin supplementation.

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