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Does a melatonin supplement alter the course of gastro-esophageal reflux disease?

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Abstract

Symptomatic gastro-esophageal reflux disease (GERD) is a very common disease. The consequence of GERD is not only erosive esophagitis, but also esophageal stricture, Barrett's esophagus and extra-esophageal damage (including the lungs, throat, sinuses, middle ear and teeth). GERD and Barrett's esophagus are also identified as major risk factors for esophageal carcinoma. Therapy with melatonin prevents esophageal injury from acid-pepsin and acid-pepsin-bile exposure in animals, then further studies are required in humans to establish whether a melatonin supplement is able to protect the patients with GERD from erosions, Barrett's and neoplasia.

Key words: Gastro-esophageal reflux disease; Melatonin; Chemoprotection; Barrett's

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TO THE EDITOR

I read with interest the paper by de Oliveira Torres and de Souza Pereira discussing the role of melatonin in gastro-esophageal reflux disease (GERD)[1]. In 2006, Professor de Souza Pereira reported that melatonin may be a relevant therapy for GERD and published a comparison of the action of a melatonin combination formula and omeprazole in GERD therapy[2,3].

Symptomatic GERD is an extremely common disease. It is estimated that approximately one-third of the United States population has GERD[4]. The consequence of GERD is not only erosive esophagitis but also esophageal stricture, Barrett's esophagus and extra-esophageal damage (including the lungs, throat, sinuses, middle ears and teeth). GERD and Barrett's esophagus are identified as major risk factors for esophageal carcinoma. Besides acid reflux, bile reflux can be a clinical challenge due to refractory GERD and it may also play an important role in the progression from Barrett's to adenocarcinoma[5,6].

It is worth drawing attention to studies performed on animal models by Konturek *et al*[7]. They showed that therapy with melatonin prevents esophageal injury in cases of both acid-pepsin and acid-pepsin-bile exposure. Their study demonstrates that melatonin can be considered as a novel esophagoprotector by acting through cyclo-oxygenase, prostaglandins and nitric oxide syntase and also activation of capsaicin-sensitive afferent neurons, which contribute to mucosal protection[7]. Konturek *et al*[7] suggested that melatonin protection of the esophageal mucosa against acid-pepsin-bile occurs via its vasodilating effect on the esophageal microcirculation.

Although GERD pathophysiology is multifactorial, so far transient lower esophageal sphincter relaxation (TLESR) is commonly recognised as the predominant

mechanism[8]. Many investigators agree that patients with GERD may experience an increase in esophageal mucosa acid exposure compared to control groups but there are patients where the number of TLESR is not increased compared to healthy controls[8]. Therefore, a hypothesis with melatonin is interesting. Moreover, it may be reinforced by the fact that older people are at a higher risk of complications from persistent GERD and melatonin production decreases as a person ages[9].

However, even if melatonin is really at the root of GERD pathophysiology, we cannot, at this stage, be sure if this hormone supplementation makes a viable substitution for proton pump inhibitor for healing erosive GERD. I think there is a no less interesting further point: if melatonin prevents esophageal injury from acid and alkaline reflux in animals, then further studies are required in humans to establish whether a melatonin supplement is able to protect patients with GERD from erosions and Barrett's esophagus from developing neoplasia. The results may also play an economic role for older patients who are at a higher risk of complications from persistent GERD and its therapy.

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