THE ROLES AND FUNCTIONS OF MELATONIN DEVELOPED AND ADAPTED IN RELATION TO THE EVOLUTIONARY PROCESSES OF LIVING ORGANISMS

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Abstract

Melatonin is a complex substance that was initially described as a hormone involved in regulating the circadian rhythm; it is the primary molecule that prompts vertebrates to fall asleep. The complexity of this substance is due, first and foremost, to its association with the circadian rhythm and the physiological state of sleep, and secondly to the multiple effects that melatonin has on animal and plant organisms. Melatonin is considered an ancient molecule, due to its presence in primitive forms of bacteria and eukaryotes, which have been reported to produce melatonin for use as an antioxidant. In this review article, we have presented the data and information available in the scientific literature on melatonin, up to and including the year 2026, with the aim of providing a detailed description of both how this substance was produced by primitive organisms to neutralize free radicals and how melatonin developed and adapted its roles and functions in relation to evolutionary processes and the organisms in which it was present.

Keywords: *melatonin, circadian rhythm, sleep, ancient molecule, antioxidant*