

Melatonin and Respiratory Diseases: A Review

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Abstract

Melatonin is an indoleamine with potent multifunctional biological and pharmacological effects, both receptor dependent and receptor-independent effects, including antioxidant, anticancer, antitumor, anti-inflammatory, anti-aging, anti-diabetic, antiviral, neuroprotective activities. Melatonin mitigates tissue injury via modification of abnormalities in redox status and other biochemical markers. At the molecular level, the biological and pharmacological activities of melatonin are attributed to the inhibition of nuclear factor-kappa beta (NF- κ), c-Fos over expression and down-regulation of matrix metalloproteinases-3 (MMP-3), which are regulators of pro-inflammatory and pro-fibrotic cytokines. There are numerous scientific reports on the therapeutic potential of melatonin in treatment of asthma, respiratory diseases for infections, chronic obstructive pulmonary disease, lung cancer, pleural cavity diseases, as well as vascular pulmonary disease. In the present communication, we systematically review the therapeutic potential of melatonin in the treatment of respiratory diseases along with its molecular mechanism of actions.