

Abstract

Melatonin is an important hormone which is known to have very diverse functions. It was originally discovered as a product of the pineal gland synthesized in a 24 hour rhythm, but in later studies was found to be synthesized in many different tissue types. Melatonin is an important part of the circadian system and its effects on sleep rhythm are well known. The effects of melatonin on the circadian system are briefly covered in the opening chapters of this thesis.

Furthermore, the basic mechanism of inflammation and the diverse effects of melatonin on the immune system are described in this thesis. Melatonin acts in an anti-inflammatory as well as pro-inflammatory manner and is part of many research projects focusing on curing for example diseases associated with chronic inflammation. This thesis presents studies regarding the effects of melatonin on pathological conditions like neurodegenerative diseases, rheumatoid arthritis and sepsis.

This thesis also describes how changes in immune system activity can change the expression of melatonin, as it is not a one way effect. However, this interaction is not well known yet.

Key words: melatonin, circadian system, immune system, inflammation