Melatonina protege os neurônios do Sistema Nervoso Central

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Neuroprotection by melatonin on astrocytoma cell death.

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Glia play an active role in the homeostatic regulation of the central nervous system (CNS). Astrocytes, the most abundant glial cell types in the brain, provide mechanical and metabolic support for neurons. The regulation of astrocyte apoptosis, therefore, is important for physiological and pathological processes in the CNS. Melatonin is a neurohormone that regulates target cells via binding to specific high-affinity plasma membrane receptors, MT1/MT2. In addition to regulating circadian rhythms, melatonin has recently attracted much interest for its potential regulation of cell apoptosis. We recently showed that melatonin antagonizes apoptosis on U937 cells via intersecting signal transduction events involving binding to MT1/MT2 and activation of lipoxygenase. Here we describe the neuroprotective potential of melatonin, showing that melatonin significantly reduces damage-induced apoptosis in astrocytoma cells. The mechanism of protection is different from that shown in U937 cells, because it does not involve MT1/MT2 or lipoxygenase; likewise, Ca(2+) influx is not involved. Intriguingly, inhibition of phospholipase C (PLC) with neomycin reverses melatonin protection, suggesting that a PLC-dependent signal transduction, different from that triggered by MT1/MT2, is involved in the antiapoptotic pathway of melatonin.

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