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Exp Gerontol. 2009 Oct;44(10):653-8. doi: 10.1016/j.exger.2009.07.005. Epub 2009 Jul 24.

Effect of melatonin and tryptophan on humoral immunity in young and old ringdoves (*Streptopelia risoria*).

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Abstract

Melatonin is involved in the regulation of both cellular and humoral immunity. In the present study we have evaluated the effect of the oral administration of melatonin and its precursor, the amino acid tryptophan, on humoral immune response in ringdoves (*Streptopelia risoria*) from different age groups. Male and female ringdoves of 4-5years of age (young) and 12-14years of age (old) were used in this study. The animals received a single capsule of 300mg/kg b.w. of tryptophan (old animals) for 3 consecutive days 1h after lights on or a single oral dose (0.25 or 2.5mg/kg body weight/0.1ml per animal/day, young and old animals, respectively) of melatonin, for 3 consecutive days 1h before lights off. Blood samples were taken before beginning the treatment (basal values) and at the end of the treatment. Immunoglobulins, bactericidal and haemolytic activity were measured. Our results show that in old animals the humoral immune response was reduced with respect to the young. Both melatonin and tryptophan treatment increased the immunoglobulin concentration, with the nocturnal values being significantly higher than diurnal values and with a major effect in old animals. The bactericidal activity of the *S. risoria* serum against *Staphylococcus aureus*, after the treatment with melatonin or tryptophan, was increased at night with a greater effect in old animals. No significant differences were observed in the haemolytic activity of the serum in young animals, but there was an increase in old animals, with higher values at night after treatment with melatonin. In general, the oral administration of melatonin or tryptophan produced a stimulation of humoral immune response with greater effects in old ringdoves.

PMID:19632315[PubMed - indexed for MEDLINE]

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