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Tryptophan modulates cell viability, phagocytosis and oxidative metabolism in old ringdoves.

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Abstract

The decrease of melatonin with age contributes to immunosenescence. Its restoration via tryptophan may have immuno-enhancing effects. Therefore, we determined the effect of tryptophan administration on circulating serotonin, melatonin, cell viability, phagocytic function and levels of free radical generation of blood heterophils from old ringdoves (*Streptopelia risoria*), aged 11-13 years. The animals received a single oral capsule of l-tryptophan 1 hr after the onset of the light period. The tryptophan treatment significantly increased serum melatonin and serotonin levels, cell viability, phagocytosis index and phagocytosis percentage. Superoxide anion levels decreased significantly with respect to vehicle values, with the nocturnal reduction being greater than that which occurred during the light period. This suggests that orally administered tryptophan at the beginning of the day enhanced heterophil viability, phagocytic response and detoxification of superoxide anion radicals deriving from this immune function, as a result of the immunoregulatory action of melatonin and serotonin.

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