In the last decades the worldwide population has exhibited an increasing life expectancy with a consequent rise in the elderly population; the increase of human life prospect has important health and socioeconomic consequences. The age-associated infirmities that accompany increased life expectancy involve cardiovascular diseases, which include diabetes, stroke, heart attack, heart failure, hypertension and neurodegenerative disease. Melatonin, the pineal indoleamine, shows remarkable function versatility exhibiting antioxidant, oncostatic, immunomodulatory and antiaging properties [1, 2]. At this aim, in this study were investigated the aging-related parameters, such as morphological alterations and inflammation at the aorta level of an animal model of senescence and the effects of chronic administration of melatonin. Twenty male senescence prone mice (SAMP8) and twenty control mice, senescence resistant mice (SAMR1), were analyzed untreated or after chronic treatment with melatonin at the dose of 10 mg/kg/day in the drinking water from the 1st to the 10th month of age. The results showed that aging induced a significative increase of tunica media thickness and alteration of the tunica intima in the aorta. In addition, we showed an increased in endothelin-1, potent vasoconstrictor, and of inflammation compared to control mice (SAMR1). Melatonin chronic administration partially ameliorates all these age-related alterations. In summary, this study supports the existence of moderate inflammatory process during aging and suggests that melatonin behaves as an essential indoleamine against aging.

References

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Fig. 1: Aorta of lean (A,D), ob/ob (B,E) and ob/ob treated with melatonin mice (C,F) analyzed with haematoxylin-eosin staining (A-C) and with endothelial nitric oxide synthase (eNOS) immunofluorescence (D-F). Bar 20 μm. l = lumen. The graphs showed the area of tunica intima/tunica media ratio (G) and eNOS histomorphometric analyses (H).

Fig. 2: Endothelin-1 immunofluorescence of (A) lean, (B) ob/ob and (C) ob/ob treated with melatonin mice at aorta level and relative histomorphometric analyses. Nuclei stained with DAPI. Bar 20 μm. l = lumen.