IJAE
Vol. 119, n. 1 (Supplement): 81, 2014
ITALIAN JOURNAL OF ANATOMY AND EMBRYOLOGY

Effect of long-term treatment with melatonin against obesity related dysfunctions in obese mice

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The increasing incidence of obesity, leading to metabolic complications is now recognized as a major public health problem. The adipocytes are not merely energy-storing cells, but they play crucial roles in the development of the so-called metabolic syndrome and cardiovascular diseases due to the adipocyte-derived bioactive factors, such adipokines, cytokines and growth factors [1]. Most of adipokines, which affect whole-body homeostasis, are pro-inflammatory, whereas a small number of anti-inflammatory adipokines, including adiponectin exert beneficial actions on obese complications. The dysregulated production and secretion of adipokines seen in obesity is linked to the pathogenesis of various disease processes [2]. New emerging data showed that melatonin, pineal gland indoleamine, play an important role in body weight regulation and energy metabolism [3].

Lean and obese mice (*ob*/*ob*) received melatonin (100 mg/kg/day) or vehicle in drinking water for 8 weeks. In obese mice we observed a significant increase in fat depots and a deregulation of adipokines and cytokines fat expressions. In particular, we observed a significant reduction of adiponectin and an increase of resistin and visfatin at adipose tissue level. Melatonin administration for 8 weeks reduced fat accumulation and restored the correct adipokines expression, modulating in turn the vascular tone and homeostasis.

These results indicate that melatonin counteracts some of the disrupting effects of obesity.

References

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Keywords

Obesity, melatonin, adipose tissue, adipokines.

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