

Melatonin in obesity: Possible therapeutic role

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The objective of our work is to unravel the relationships between melatonin and the Metabolic Syndrome (MS) with emphasis in the possible therapeutic role of the methoxyindole. Being the MS a global pandemic, with a rising prevalence close to 30%, we, as others, believe that it is not only related to an inadequate nutrition and sedentarism, but also, to an unbalance between the current life style and natural light-dark cycles. Prolonged exposures to light during night and sleep impairment negatively affect many vital processes, as shown by a decreased melatonin production, modified circadian rhythms and oxidative overload.

As an accepted experimental model of MS, we use male Wistar rats fed with regular chow and 10% fructose drinking solution *ad libitum*. After 8 weeks, the MS phenotype is developed. The administration of melatonin (25 µg/mL drinking solution) given to rats simultaneously with fructose was employed as a paradigm to analyze its effect on different metabolic consequences of MS. Along with the progression markers of MS, we also studied oxidative damage on adipose tissue, as a main player in this scene. We evaluated lipid peroxidation by TBARs determination and the oxidative status by glutathion levels (GSSG/GSH). As compared to control, body weight and systolic blood pressure augmented significantly, and an impaired glucose tolerance was detected as shown by the increases in glycemia, insulinemia and leptinemia. Circulating triglyceride, cholesterol and LDL-c concentration also augmented significantly. Melatonin counteracted the changes in body weight and systolic blood pressure in rats. Melatonin also decreased glycemia, insulinemia and leptinemia and it was effective to counteract the changes in plasma LDL-c, triglyceride and cholesterol, augmented HDL-c levels and decreased plasma uric acid levels. The results underline the possible utility of melatonin in the treatment of MS.

Biography

Eleonora S. Pagano has graduated in Biology from the School of Exact and Natural Sciences (FCEyN), University of Buenos Aires (UBA) where she has also completed her PhD in Chemistry with a *cum laude* grade, on the role of growth factor receptors in *in vitro* adipogenesis. After her postdoctoral training at the Leloir Institute, she became a member of the National Council of Scientific Research (CONICET). Currently, she has a full time dedication at the UCA, as a researcher and as a professor. She is mainly interested in the physiology of adipose tissue, obesity and metabolic syndrome, and on the disrupted circadian mechanisms related to these pathologies.

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