

## Would be Melatonin Suitable for Obesity Treatment?

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**Keywords:** Obesity; Losing weight; Melatonin; Antioxidant; Metabolism; Adipocyte

Obesity and over-weight can be treated by diets and/or sport activities. The standard approaches for the therapy purposes are relatively safe and they are widely recommended. Unfortunately, efficacy of the therapies is limited and relapses of the obesity or over-weight frequently occur. Introduction of surgical techniques such as restriction of stomach volume or bypassing the intestines is another option. The surgical techniques have some backwards as well. In the recent years, management of obesity by application of a new generation drugs seems to be suitable for a fast and reliable therapy. Beside newly developed drugs acting centrally, inhibitors of lipases and drugs reducing adipose formatting are available or tested [1]. The novel drugs, however, have either limited efficacy or significant adverse effects in course of the drugs toxicity and side impacts on the body homeostasis. Evidence of the adverse effects appoint at seriousness of the complications [2]. A surprising fact was found in evaluation of dietary supplements including melatonin which was able to initiate loses of weight or lower gain of weight in the treated individuals [3]. The findings related to melatonin are surprising as melatonin has main biological effect based on circadian rhythm control for which is traded. The pertinent therapy based on melatonin seems to be quite promising when considered low toxicity even when administered for a long time period [4]. Unfortunately, link between melatonin and metabolism control is not well understood and lack of information is quite limiting and not commonly accepted.

Melatonin is a hormone produced by pineal gland. It is responsible for sleep control and time cyclicity. Beside the hormone action, it is a potent antioxidant do not causing pro-oxidant action when oxidized. Endogenous as well as exogenous melatonin meets regulation of immunity and controls inflammation in a way which is not well understood. The issue of melatonin as a therapy of different degenerative disorders was extensively reviewed previously [5]. Tests on laboratory animals proved higher gain of weight when animals were pinealectomized and in thus way had reduced level of circulating melatonin [6]. Application of exogenous melatonin resolved the gain of weight caused by pinealectomization. Beside weight, melatonin seems to be able to ameliorate some detrimental consequences of obesity including susceptibility to myocardial ischemia in rats receiving high-calorie diet induced obesity [7]. Owing to the fact that melatonin receptors are in adipose tissue and may activate sympathetic nervous system, it can be inferred that melatonin up-regulates consumption of energy [8].

Melatonin is commercialized in many countries as a dietary supplement with low or no adverse effects. Though the main interest toward melatonin is based on its implementation as a safe medicament for sleep disorders amelioration, it would be appropriate to be used for other purposes as well. Preliminary results from melatonin regulation of metabolism are promising and melatonin can be appointed as a candidate of novel drug for obesity therapy. Research of melatonin action on molecular level would be one of the steps toward use

melatonin as a drug for obesity therapy. In the research, not only reveal of melatonin regulated processes but also careful examination of its effects in humans should be done. The issue of melatonin deserves attention of researchers introducing new drugs in obesity and over-weight therapy.

### Acknowledgements

A long-term organization development plan 1011 is gratefully acknowledged.

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Received May 14, 2012; Accepted May 16, 2012; Published May 20, 2012

Citation: Pohanka M (2012) Would be Melatonin Suitable for Obesity Treatment? *J Obes Wt Loss Ther* 2:e105. doi:10.4172/2165-7904.1000e105

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