Abstract

Chronobiology is a word derived from three Greek stems: kronos for time, bios for life and logos for study. From microarrays studies, now it is accepted that 10-30% of the human genome is under the control of circadian molecular clocks. This implies that most behavioral, physiological and biochemical variables display circadian rhythms in their expression. In its simplest form, circadian clocks are composed of a set of proteins that generate self-sustained circadian oscillations. The molecular clock comprises two transcription factors, CLOCK and BMAL1, whereas PERs and CRYs are responsible for the negative limb. One of the most important questions related to the circadian system and obesity, was to elucidate if adipose tissue displayed circadian rhythmicity or whether it had an internal peripheral clock. Our group of research has provided an overall view of the internal temporal order of circadian rhythms in human adipose tissue. A new concept related to illness is Chronodisruption (CD). It is defined as a relevant disturbance of the internal temporal order of physiological and behavioral circadian rhythms. In our modern society, CD may be common in several conditions such as jet lag, shift work, light at night, or social jet lag. In addition clock gene polymorphisms and aging may have also chronodisruptive effects. Our group has also demonstrated that Obesity and CD are also highly interconnected. With the help of chronobiology we can reach a new view of obesity considering not only “what” are the factors involved in obesity, but also “when” these factors are produced.

Keywords

Chronobiology, Obesity, Chronodisruption, Epigenetics, Human adipose tissue.