Abstract

Well functioning circadian system is crucial component of healthy organism and its disruption can result in impairment of metabolic functions with consequential development of obesity and type 2 diabetes mellitus. Obesity is in general caused by enhanced migration of pro-inflammatory polarized macrophages (M1) into adipose tissue. We have shown, that interaction of this type of macrophages with adipose tissue had significant effect on rhythmic expression of clock genes in adipocytes. We further investigated effect of high fat diet and diet enriched by omega-3 fatty acids on circadian oscillations in WAT and differently polarized macrophages. This diet affected oscillations in adipose tissue and in M0 and M2 polarized macrophages. These results support previous findings of effect of omega-3 fatty acids on metabolism and suggest their effect on circadian system as well.

Key words: circadian rhythms, adipose tissue, macrophages, omega-3 fatty acids, high fat diet