

**Changes in adiposity and body composition during anaemia recovery with goat or cow fermented milks**

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## **Abstract**

Diet plays a key role in body weight and body composition and dairy products comprise a major food group being an important nutrient source in the diet. To date, no studies are available about the adipose tissue modifications during anaemia recovery; therefore the aim of this study is to provide detailed information about adipose tissue homeostasis during anaemia recovery with fermented milks. Forty male Wistar rats were placed on a pre-experimental period of 40 days, divided in two groups (control group receiving normal-Fe diet and Fe-deficient group receiving low-Fe diet). Then rats were fed with fermented goat or cow milk-based diets, with normal-Fe content during 30 days. After feeding the fermented milks, several adipokines (ghrelin, leptin, adiponectin, insulin), plasma concentrations of non-esterified fatty acids (NEFA), and the protein regulation/expression of uncoupling protein 1 (UCP-1) and irisin within the adipose tissue were assessed. Ghrelin and adiponectin decreased in both groups of animals fed on fermented goat milk, while leptin and NEFA increased. UCP-1 decreased in anaemic rats both fed on fermented milks, and irisin greatly increased in both groups of animals fed on fermented goat milk. Fermented goat milk consumption modulates adipose tissue depots homeostasis during Fe deficiency recovery, reducing adiposity, inducing leptin elevation and ghrelin reduction. Plasma adiponectin concentrations decreased in animals fed fermented goat milk showing an inverse correlation with NEFA, an important marker of lipid mobilization, indicating increased lipolysis. Irisin up-regulation in animals fed fermented goat milk contributes to a favourable metabolic profile and the browning of adipose tissue during anaemia recovery.