

**NOVEL METABOLIC REGULATORS AND PROINFLAMMATORY  
FACTORS IN THE ETIOPATHOGENESIS OF TYPE 2 DIABETES  
MELLITUS AND OBESITY: THE INFLUENCE OF  
PHARMACOLOGICAL AND DIETARY INTERVENTIONS**

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**ABSTRACT (EN)**

Identifying novel factors involved in the etiopathogenesis of obesity, diabetes mellitus and their complications has become one of the primary scopes of metabolic research in the last years. The aim of the present study was to evaluate the role of recently discovered metabolic and inflammatory regulators including fibroblast growth factors 19 and 21 and chemotactic cytokines in the development of obesity and type 2 diabetes mellitus (DM2).

A total number of 182 patients were included into the study. They were divided into 3 groups – patients with obesity but without type 2 diabetes mellitus, individuals with obesity and type 2 diabetes mellitus and healthy control normal-weight subjects. Selected interventions included 2 to 3 weeks of very-low-calorie diet (VLCD – energy content 2500 kJ/day), 3 months of administration of PPAR $\alpha$  receptor agonist fenofibrate and acute hyperinsulinemia during hyperinsulinemic isoglycemic clamp.

Our results indicate that the increase of circulating FGF-21 levels after VLCD and fenofibrate treatment could contribute to positive metabolic effects of these interventions. Serum FGF-19 concentrations also partially depend upon the nutritional status of the organism, although they are not directly influenced by parameters of glucose metabolism. Obesity regardless of DM2 is associated with increased expression of chemotactic and proinflammatory cytokines in subcutaneous adipose tissue and corresponding receptors on peripheral monocytes (PM). Short-term caloric restriction significantly improves this profile, especially on PM.

**Keywords:** type 2 diabetes mellitus – obesity – fibroblast growth factor 19 – fibroblast growth factor 21 – low-grade inflammation – chemokines – very-low-calorie diet – fenofibrate