

LIMITATION OF GAS EXCHANGE AND THE DEVELOPMENT OF HYPOMETABOLIC STATE UNDER LIPID OVERLOAD ARE RISK FACTORS FOR THE DEVELOPMENT OF TYPE 2 DIABETES IN RATS

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A high-fat diet (HFD) causes insulin resistance, but this does not always lead to the development of type 2 diabetes. It is not known whether there are manifestations of such a risk associated with lung ventilation and gas exchange. In male Wistar rats fed HFD, type 2 diabetes was initiated by the administration of a low dose of streptozotocin; changes in the ventilatory response of the lungs and gas exchange in the dynamics of the experiment were studied. It was established that in part of animals after 2 weeks of HFD, the ventilatory response was reduced due to a decrease in oxygen consumption, and subsequently, the development of type 2 diabetes was observed in this subgroup. In other animals, the hypometabolic state was not found, and following metabolic disorders were limited to prediabetes. A negative correlation link was found between oxygen consumption and body weight in the first subgroup ($r = -0.52$, $P < 0.05$), and a positive link - in the second ($r = 0.42$, $P < 0.05$). Thus, the decrease in oxygen consumption during lipid overload can be a risk factor and a marker of the threat of type 2 diabetes