

METABOLIC DYSFUNCTIONS CAUSED BY EARLY FRUCTOSE INGESTION ARE PREVENTED IN CONCURRENTLY EXERCISED ADULT MALE RATS

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This study evaluated whether fructose ingestion at adolescence programs the development of metabolic syndrome (MetS) in adult rats and whether moderate-intensity combined exercise can attenuate fructose-induced MetS compounds. Pubertal rats were trained on a treadmill (55-65% $\text{VO}_{2\text{max}}$), 3 times/week, 44 min/session, for one month. They were allocated into four groups: sedentary control (SC), trained control (TC), sedentary fructose (SF), and trained fructose (TF). Groups F ingested 10% fructose. Food intake (AI) and body weight (BW) were measured weekly. At 60 and 120 days of age, metabolic parameters were evaluated. Fructose intake mainly affected animals in adult life, and these changes were related to glucose intolerance ($p=0.001$), periepididymal fat ($p<0.03$), and increase in total cholesterol (TC) ($p<0.001$), triglycerides (TAGs) ($p<0.0001$) and insulin ($p<0.0001$) levels. Early physical exercise was able to decrease periepididymal ($p<0.003$) and retroperitoneal ($p<0.0002$) adipose tissue, TC levels ($p<0.0001$) and glucose tolerance ($p=0.21$). Rats that received combined treatments during adolescence showed low glycemia ($p=0.003$) and insulinemia ($p<0.0001$) during the intraperitoneal glucose tolerance test (ipGTT). HOMA-IR ($p=0.02$) and TYG ($p=0.0003$) scores also improved in these rats. We conclude that early ingestion of 10% fructose was effective in programming adult rats to MetS, and simultaneous moderate exercise attenuated these aggressions, causing changes in glycemic homeostasis and lipid metabolism.

Key-words: Fructose, Aerobic Exercise, DOHaD

Funding: CNPq, INSPAM/JBS

