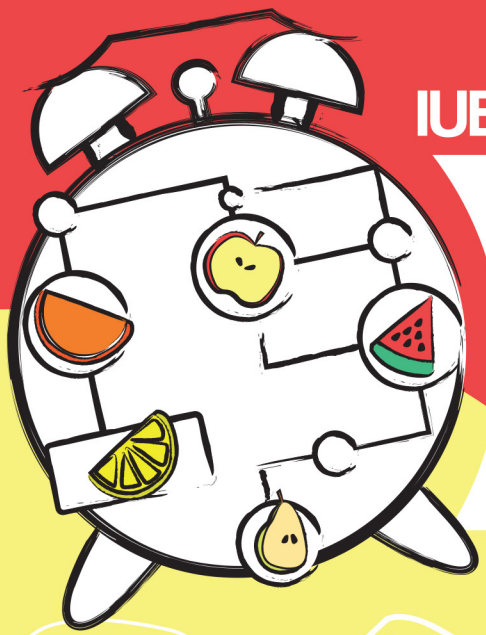

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DE NOVO LIPOGENESIS AND GLUCONEOGENESIS IN THE LIVER OF MALE FRUCTOSE-FED RATS EXPOSED TO CHRONIC STRESS

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The aim: High fructose diet and chronic stress were both linked with metabolic disturbances. Thus, we analyzed their separate and combined effects on metabolic homeostasis, with particular focus on hepatic lipogenesis and gluconeogenesis.
Methods: Male Wistar rats were subjected to 9-week 20% fructose diet and/or 4-week chronic unpredictable stress. The following morphological and biochemical parameters of lipid and glucose metabolism were measured: body and liver mass, energy intake, blood glucose and plasma insulin levels, free fatty acids (FFA), lactate, triglycerides (TG) and VLDL-TG, as well as hepatic VLDL production rate, total hepatic TG and palmitate and stearate percentage shares. Furthermore, the expression of transcriptional regulators and enzymes of hepatic *de novo* lipogenesis (DNL), lipoprotein export and gluconeogenesis were analyzed.
Results: Although energy intake was increased after fructose diet, body and liver mass remained unaltered. Plasma TG were elevated in both fructose-fed groups, whereas FFA were increased in the non-stressed fructose-fed group. Parameters of hepatic TG and VLDL production and export were unaffected, except for the hepatic palmitate production which was increased after combined treatment. The increments of fractional DNL and palmitate production accompanied the upregulation of lipogenic enzymes, fatty acid sythase and acetyl-CoA carboxylase, which was, interestingly, not preceeded by the increase of their transcriptional regulators. In both fructose-fed groups blood glucose level was increased, although hepatic gluconeogenesis was unaffected.
Conclusion: Combined stress/fructose treatment is more aggravating than separate treatments, since it leads to an increase in hepatic *de novo* lipogenesis and total hepatic TG palmitate, without concomitant changes in VLDL production and export.

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