

Effect of Zingerone on High-Fructose Diet-Induced Metabolic Derangements in Growing Sprague-Dawley Rats

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Abstract : Consumption of fructose increases the risk of obesity, nonalcoholic fatty liver disease (NAFLD) and metabolic syndrome in children. Zingerone which is found in ginger has antidiabetic and antiobesogenic properties. Therefore, the aim of the study was to investigate the potential of orally administered zingerone to protect growing Sprague-Dawley rats (mimicking growing children) against high-fructose diet-induced metabolic derangements. Forty, 21-day old female Sprague-Dawley rats were randomly allocated and administered the following four treatments for 12 weeks: group I: standard rat chow (SR) + plain water (PW) + plain gelatine cube (PC). group II: SR + 20% (w/v) fructose solution (FS) + PC. group III: SR + FS + 100 mg/kg/day of fenofibrate in gelatine cube. group IV: SR+ FS + 20 mg/kg/day of zingerone in gelatine cube. The rats' triglyceride, cholesterol, insulin & adiponectin concentration, visceral fat liver lipid content, homoeostasis model assessment of insulin resistance (HOMA-IR) and ability to handle glucose were determined. Oral administration of zingerone significantly increased ($P<0.001$) visceral fat and liver lipid content ($P<0.001$), respectively. Results from the study revealed that administration of 20% fructose solution did not induce metabolic dysfunction, however the zingerone treatment increased visceral fat and liver lipid content, all these lipid abnormalities are typical features of the metabolic syndrome, therefore the current study suggests that zingerone has no effect on metabolic dysfunction in adolescent females.

Keywords : antidiabetic, metabolic syndrome, zingerone, antiobesogenic

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