

SUBSTANCES FROM COMMON GRAPE EXTRACT WEAKEN LIPOGENESIS CHANGES IN PATIENTS WITH METABOLIC SYNDROME

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Introduction. The metabolic syndrome is a special symptom-complex which includes insulin resistance development, the disturbance of glucose tolerance, augmentation of body weight or a gross obesity, atherogenous changes in the blood lipoprotein profile, predilection towards thrombogenesis and other pathological changes. There are many factors that contribute to metabolic syndrome development. Major factors are low physical activity and a high-caloric diet. The correlation of central obesity with an insulin resistance in muscles can be explained by high rate of triglyceride exchange and free fatty acids metabolism. It is widely known that under the metabolic syndrome there is a high level of glucose-6-phosphate accumulation. Pentose phosphate pathway is one of the ways of glucose-6-phosphate utilization. This results in the high NADP(H⁺) levels in cells, which upregulates the fatty acid synthase activity. Therefore activity changes in NADP-producing dehydrogenases can be considered as an indicator of intensity of lipogenesis.

The **aim** of the present work was to investigate changes in lipogenesis indices in animals with experimental metabolic syndrome.

Materials and methods. Activities of key enzymes of lipogenesis were measured in liver homogenates on male Syrian hamsters fed with high-caloric diet with fructose.

Results and discussion. It was found that metabolic syndrome was followed by a small augmentation of NADP-dependent malate dehydrogenase activity and the decrease of pentose phosphate pathway dehydrogenases activity, which proves that contribution of lipolysis activation to hyperlipidemia is insignificant. At the same time lipid levels in blood serum and liver homogenate was elevated significantly. This results corresponds with the statement that, first of all, metabolic syndrome lowers the lipid oxidation without exerting any significant effects on the intensity of steroids and fatty acids synthesis. The main reason of the high interest in antioxidant therapy was the intensification of lipoperoxidation in metabolic syndrome. In our study we used the common grape extract which can be characterized by the high content of phenolic antioxidants. We found that this type of antioxidant therapy within 2 weeks in metabolic syndrome models caused the essential changes in the registered parameters. Lipid accumulation was decreased during all of the study period, dehydrogenase activity was normalized.

Conclusions. Results indicate the high effectiveness of the antioxidants use in complex therapy of a metabolic syndrome.