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MEETING ABSTRACT

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Influence of carob extract on body mass and markers of adipose tissue function in rats

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Background: Carob (*Ceratonia siliqua* L.) has emerged in recent years as a novel potential lipid-lowering plant-based treatment. Carob is a Mediterranean and Middle Eastern evergreen tree or shrub belonging to the Caesalpinioideae subfamily of the Fabaceae (Leguminosae) family. Over time its edible fruit pods became well-known worldwide, while carob has been recognized for its numerous health benefits, particularly its anti-inflammatory, antioxidant, body mass and lipid-lowering effects in animals and humans.

Methods: Adult Wistar albino rats, weighed between 225 and 275 grams, were obtained from the Military Medical Academy (Belgrade, Serbia), randomly selected and confined in the vivarium of the Novi Sad Faculty of Medicine, Department of Pharmacology, Toxicology, and Clinical Pharmacology for the course of the experiment. Standard laboratory conditions included a temperature range of 23 to 25°C, a relative humidity of 55 ± 1.5%, a 12/12-hour dark–light cycle, and unlimited access to pellet (cholesterol-enriched) food and water. The Ethics Committee for the Protection of Laboratory Animal Welfare of the University of Novi Sad provided approval for this study.

Results: Weight gain of all animals fed a cholesterol-rich diet for four weeks was significantly higher than that of control animals fed a standard diet. Weight gain was reduced by treatment with carob extract or simvastatin plus carob extract. Average liver mass of animals given cholesterol-enriched food and treated with saline, carob extract, simvastatin, and a combination of simvastatin and carob extract was significantly higher compared to the control group that was fed a standard diet. Average liver weight of rats treated with carob extract and the combination of carob extract and simvastatin was substantially reduced related to other groups. The concentration of leptin in the serum of animals fed cholesterol-enriched food and given saline was significantly higher than in the standard-diet group and in the groups of animals given carob extract, simvastatin, or a combination of carob extract and simvastatin. The concentration of adiponectin in animals fed a cholesterol-rich diet was significantly higher than in control animals fed the standard-diet. Adiponectin concentrations in animals treated with carob extract either alone or in combination with simvastatin were lower than concentrations found in animals treated with simvastatin alone.

Discussion: In this research, we showed the potential effect of carob on body weight of animals that received high-calorie food, as well as a reduction of liver mass in animals that were treated with carob. In addition, carob showed a beneficial effect on markers of adipose tissue function.

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Keywords: lipid-lowering treatment – carob extract – body mass – leptin – adiponectin

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