

# **EFFECT OF BEARBERRY LEAVES POLYPHENOL EXTRACT ON SOME LIPID INDICES UNDER EXPERIMENTAL INSULIN RESISTANCE**

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The food rich in fats and easy-to-digest carbohydrates is a key factor for the metabolic diseases development. WHO in its reports deliberately notes that one of the main factors that contribute in obesity and insulin resistance (IR) is the modern diet.

The aim of the experiment was to investigate the effect of bearberry leaves polyphenol extract (PE) on some lipid indices under experimental IR.

Experimental IR was induced by feeding male rats high-calorie diet enriched with fructose (29% of fats, 2 g/100 g body weight of fructose – daily, HCD) during 5 weeks (IR group). In addition, the other groups beginning from the 3-rd week along with HCD were intragastrically administered PE (NUPh Pharmacognosy department) in dose 9 mg of polyphenols/100 mg body weight (PE group) and arbutin («Sigma Aldrich», USA) in dose 30 mg/kg body weight (Ar group), also was intact control group. After the end of the experiment total cholesterol (TCh), LDL cholesterol (LDL-Ch), HDL cholesterol (HDL-Ch), triacylglycerols (TAG) and free fatty acids (FFA) were determined in the blood serum using commercial kits. The IR development was proved by measuring of glucose and insulin content in blood.

In our study, we found that feeding HCD led to significant increase in TAG and FFA level in blood serum comparing with intact animals for 48% and 17% respectively. At the same time, there were no substantial changes in blood TCh content in IR animals – the increase amounted to 8%. The PE administration lead to significant decrease in both TAG and FFA content compared with IR group. Thus, including TCh content, there were no significant difference between PE group and intact group regarding studied indices. Meanwhile, arbutin administration led to decreasing in FFA level but not totally correct the TAG level in blood serum.

Considering the fact that blood serum TCh level wasn't change a lot in IR group, it was of great interest to investigate LDL-Ch and HDL-Ch ratio in all the groups of animals. Results showed that LDL-Ch content in IR group were significantly higher (in 1.62 times) and correspondingly HDL-Ch lower (in 1.43 times) compared with intact animals. In turn, the PE administration contribute in increasing of HDL-Ch increasing it approximately to that in healthy rats.

Thus, experimental data proved that PE revealed more positive effect on lipid profile improving than purified arbutin under experimental IR in rats. The presence of other compounds with antioxidant properties in PE can be explanation for these results.