

## **CORRECTION OF EXPERIMENTAL INSULIN RESISTANCE BY ADMINISTRATION THE EXTRACTS FROM BLUEBERRY AND COWBERRY LEAVES WITH THE ADDITION OF ARGININE**

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Insulin resistance - insensitivity of tissues to insulin - is one of the factors of type 2 diabetes and its consequences development. Diabetes is characterized by a disturbance of all types of metabolism and high risk of cardio-vascular complications.

Antidiabetic properties of blueberries and normalizing effect of cowberry on metabolism are well known. Arginine - a natural precursor of the vasodilator nitric oxide - is used for the treatment of vascular pathologies.

The aim of present work was to investigate the effect of the extracts from blueberry and cowberry leaves with the addition of arginine (EBA and ECA respectively) on metabolic disorders under experimental insulin resistance.

Experimental insulin resistance was modulated by fructose-rich diet (18.3% protein, 60.3% fructose and 5.2% fat). Experimental rats were divided into 4 groups: 1) the control group received regular rat chow, 2) the study group received fructose-rich diet, 3) and 4) the study groups received fructose-rich diet with EBA or ECA in dose 2.5 mg/100 g b.w. Plasma glucose, insulin concentration, levels of triacylglycerols (TAG), free fatty acid (FFA),  $\alpha$ - and  $\beta$ -cholesterol (ChS) were determined after 6 weeks of experiment.

Fructose-rich diet provoked hyperglycemia, hyperinsulinemia, increase of TAG, FFA and  $\beta$ -ChS level and decrease of  $\alpha$ -ChS content. These data demonstrate the development of insulin resistance and atherogenic dyslipidemia. Upon both extracts administration decrease of glucose and insulin levels was observed. The latter is due to the ability of polyphenols to increase tissue insulin sensitivity and enhance glucose uptake by them. EBA and ECA treatment also normalized plasma levels of the indices of lipid metabolism. This is due both to the effect of hypoglycemic properties as well as to hypolipidemic and antioxidant properties of extracts components. It is known that the leaves of investigated plants are rich in phenolic compounds, hydroxycinnamic compounds, flavonoids and unsaturated fatty acids. EBA had a more pronounced protective effect than ECA, obviously, due to the different composition of anthocyanins.

Studied extracts provided a normalizing effect so they are perspective raw materials for the development of new drugs for the treatment and prevention of diabetes.