

Preventive effect vanadium, zinc and bioflavonoids on the onset of diabetes in BB rats

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Vanadium, other trace elements and bioflavonoids have been shown to be beneficial in the treatment of animal models of type 1 and type 2 diabetes. The aim of the study was to evaluate the preventive effects of vanadate (as ammonium metavanadate), zinc chloride and bioflavonoids in prediabetic BB rats.

80 BB rats were divided into 4 equal groups. Group "V" was treated with ammonium metavanadate (0.1 mmol/l), "Z" with zinc chloride (0.1 mmol/l), and "BF" with Flavin 7® (nutrition additive with bioflavonoids, 0.2 mg/l) in drinking water from 21st day after birth to 171st day of their life, and compared with "C" – control group on pure tap water. In each group food and water intake, urine output and body mass were followed regularly. The manifestation of diabetic state was monitored through blood glucose, glycosuria and glycosylated hemoglobin determinations. Antioxidant system activity was estimated through enzyme (red cell superoxide dismutase, red cell catalase, whole blood glutathione peroxidase) as well as total antioxidant status and glutathione assays.

The age of onset of diabetes and its incidence were significantly higher in "BF" and "V" groups as compared to controls ($p < 0.001$), and zinc treated group ($p > 0.05$). In overtly diabetic rats blood glucose was higher in control group than in "V" and "BF" groups, $p < 0.001$. Decrease of parameters of the antioxidant status, at the onset of the treatment as well as immediately after its cessation showed a drop in the treatment groups, but later increased slowly and continuously until the end of the experiment. The activity of antioxidant enzymes increased slowly from the beginning of study up to the point of diabetes manifestation and decreased thereafter. The decline was less evident in rats treated with bioflavonoids.

Both bioflavonoids and vanadate delay the development and lower the manifestation rate of diabetes in BB rats which is not the case in zinc treated animals. The same compounds decrease hyperglycaemia in diabetic rats. Bioflavonoid supplementation could have a beneficial effect on antioxidant status in diabetes mellitus.

Effect of immunonutrition with omega-3 fatty acids on oxidative stress response in polytraumatized patients – Pilot-study

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A state of increased oxidative stress has been recognised in polytraumatic injury that was influenced beneficially by omega-3 fatty acids substitution in patients with type 2 diabetes mellitus. Moreover previous studies have shown that administration of omega-3 fatty acids mixed with other antioxidant substances resulted shorter postoperative periods in the intensive care unit.

We evaluate the effect of nutrition with omega-3 fatty acid on the polytraumatic injury induced oxidative stress.

13 patients were randomised to Intralipid and Omegawen groups, based on their parenteral feeding. There was difference only in omega-3 supplementation between nutrition of the two groups. Blood samples were taken on admission and during the following 5 days. We measured the level of malondialdehyd (MDA), glutathion (GSH), plasma SH groups (PSH), the activity of superoxid dismutase (SOD), catalase (KAT), and peroxidase (MPO) enzymes, and the stimulated reactive oxygen species (ROS) production of whole blood. Injury Severity Score (ISS) and Simplified Acute Physiology Score (SAPSII) were calculated on admission. Clinical data, Sequential Organ Failure Assessment Score (SOFA), Multiple Organ Dysfunction Score (MODS) were calculated every day. Primary endpoints were the duration of ICU stay and the number of mechanical ventilated days. For statistical analysis we used Mann-Whitney U test and two-way ANOVA test.

The two groups were similar initially in ISS, SAPS II, MODS, SOFA. The MDA level was significantly higher in both groups compared to the control healthy group ($p < 0.05$). We observed an elevating tendency in MPO enzyme activity in both