

## **lek. Klaudia Grądzka**

temat pracy: „*Wpływ diety wysokoaminokwasowej na parametry bariery antyoksydacyjnej skóry szczurów*”

### **Summary**

The imbalance between the formation of reactive oxygen species and antioxidant capacity of the body is known as oxidative stress. Exposition of the skin to free radicals, the origin of the internal and external causes activation of multiple mechanisms to eliminate them and prevent in this way the development of oxidative stress. Oxidative stress is largely responsible for the numerous complications cutaneous course of various diseases, as well as accelerated skin aging.

Highaminoacids diet as a supplementation of whey protein concentrate (WPC) of a standard well balanced diet, has a perfectly balanced composition, well absorbable proteins from the gastrointestinal tract, which are an ideal source of essential amino acids. Beneficial effects of diet WPCs include an antioxidant, stimulating the immune system, anti-tumor and antibacterial, antiviral, antihypertensive and cholesterol-lowering or normalization of blood glucose levels. WPC diet reduces the effects of "attack" of free radicals by increasing the antioxidant activity which is the glutathione.

The aim of the study was to assess what changes will occur in the antioxidant barrier unharmed skin of rats, who are on a highaminoacids diet for 7 and 14 days at administered doses of 0.3 and 0.5 g / kg body weight.

The study was conducted with the consent of the Local Ethical Committee for the Affairs of Experiments on Animals in Białystok 12/2011 dated. 23.02.2011 at sexually mature male Wistar rats (160-180g), from the Department of Experimental Pharmacology UMB. Throughout the duration of the experiment animals were housed in standard conditions (20-21°C, a cycle of 12-hour light / 12-hour dark) and have unlimited access to drinking water and proper granular feed. Rats were divided into five groups of ten animals each:

1. control (standard feed),
2. with a highaminoacid diet (WPC-80 80% whey protein) administered for 7 days at a dose of 0.3g/kg of body weight,

3. with a highaminoacid diet (WPC-80 80% whey protein) administered for 7 days at a dose of 0.5g/kg of body weight,

4. with a highaminoacid diet (WPC-80 80% whey protein) administered for 14 days at a dose of 0.3g/kg of body weight,

5. with a highaminoacid diet (WPC-80 80% whey protein) administered for 14 days at a dose of 0.5g/kg of body weight.

After a reasonable period of experiment from all tested animals were collected fragments of shaved dorsal skin, which was frozen. On the day of biochemical assays the skin sample was homogenized. To obtained supernatant were used. The obtained material was determined the total antioxidant capacity (TAS), the total oxidative status (TOS), the index of oxidative stress (OSI), concentration of superoxide dismutase 2 (SOD2) and 3 (SOD3), concentration of catalase (CAT) specific activity of glutathione peroxidase (GSH-Px), the concentration of glutathione (GSH) and total protein content.

Assessment of the differences in the distribution of continuous variables between the two groups was performed using ANOVA and Kruskal-Wallis test and median test using Statistica 10.0. To evaluate the relationship between quantitative variables was used nonparametric Spearman correlation coefficients.

Based on the results obtained in during the examination procedure the following conclusions:

1. Enrichment of standard diet by the preparation of WPC-80 does not affect the total oxidative status undamaged healthy skin of the rat.
2. Enrichment of standard diet by the preparation of WPC-80 administered in a dose 0.5 g / kg body weight for 14 days decreased the total antioxidant capacity undamaged healthy skin of the rat.
3. A highaminoacids diet does not affect on the activity of antioxidant enzymes in healthy undamaged skin of rat.
4. The supplementation of the standard diet by the preparation of WPC-80 administered in a dose 0.5 g / kg body weight for 14 days containing methionine and cysteine (essential amino acids involved in the formation of glutathione), significantly increases the concentration of reduced glutathione which is non-enzymatic antioxidant.