Effect of a high amino acid diet on antioxidant barrier parameters of rat skin. Part 1

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ABSTRACT

Introduction: Oxidative stress is largely responsible for numerous skin complications that occur in the course of various diseases as well as accelerated skin aging. A high amino acid diet, supplemented with whey protein concentrate (WPC), is well-balanced and has well-absorbing proteins, which are an ideal source of essential amino acids.

Purpose: To assess what changes will occur in the antioxidant barrier of unharmed skin of rats on a high amino acid diet.

Materials and methods: The study was conducted on sexually mature male Wistar rats (160-180g): 1. control (standard feed), 2. high amino acid diet (WPC-80 80% whey protein) administered for 7 days at a dose of 0.3g/kg of body weight, 3. WPC-80 for 7 days at a dose of 0.5g/kg of body weight, 4. WPC-80 for 14 days at a dose of 0.3g/kg of body weight, 5. WPC-80 for 14 days at a dose of 0.5g/kg of body weight. Total antioxidant capacity, total oxidative status and oxidative stress index were determined.

Results: Enrichment of a standard diet with WPC-80 did not affect the total oxidative status of undamaged healthy rat skin. This study shows that a diet rich in amino acids in rats caused an increase in total antioxidant capacity, but statistically significant values were obtained after 14 days of administering WPC at a dose of 0.5mg/kg of body weight.

Conclusions: Enrichment of a standard diet with WPC-80 strengthens the antioxidant barrier in unwounded healthy rat skin.

Keywords: Whey protein concentrate, oxidative stress, skin, rat

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