

Wpływ spożycia alkoholu etylowego na parametry obrony antyoksydacyjnej w wątrobie szczurów Wistar

Influence of ethanol intake on hepatic antioxidant defense parameters in male Wistar rats

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Abstract – Introduction. Chronic ethanol intake may cause many negative health consequences. Oxidative stress is associated with the imbalance between intracellular production of reactive oxygen species and their elimination by the biological system.

The aim of the presented study was to examine the influence of ethanol intake on chosen antioxidative parameters in liver homogenates of young male Wistar rats, which served as an animal model of alcohol drinking among adolescents.

Material and method. The object of the study were 25 young Wistar male rats. The animals were divided into 4 groups: 2 experimental groups (E2 and E6) and 2 control groups (C2 and C6). The intake of the experimental groups was a 10% ethanol solution since the 30th day of life, during 2 and 6 weeks periods respectively. The control groups were drinking water *ad libitum*. Experimental groups were drinking only alcohol during the dark cycle, and during the day, also water *ad libitum*. After a period of 2 and 6 weeks the rats were anesthetized and their livers were collected. The activity of glutathione reductase (GR) and the level of total antioxidant status (TAS) in the liver homogenates were determined spectrophotometrically using test kits.

Results. During two weeks of experiment the average daily ethanol intake was 6 ± 1 g/kg body weight, whereas in animals receiving 10% ethanol solution for six weeks, average daily ethanol intake was 5 ± 1 g/kg of body weight. The statistical analysis revealed no significant effect of 2 and 6 weeks of ethanol consumption on TAS concentration in the liver of the rats. Simultaneously, a significant decrease of GR activity after 2 weeks, but not after 6 weeks, of 10% ethanol solution intake and no change in activity after 6 weeks was observed. Over a shorter period of alcohol consumption the antioxidant defense mechanisms in the liver were disturbed.

Key words: ethanol, reactive oxygen species (ROS), total antioxidant status (TAS), glutathione reductase (GR), Wistar rats

Streszczenie – Wprowadzenie. Długotrwałe spożywanie nadmiernych ilości alkoholu prowadzi do występowania szeregu niekorzystnych efektów zdrowotnych. Metabolizm etanolu zakłóca obronę antyoksydacyjną w organizmie m.in. poprzez wzmożoną produkcję reaktywnych form tlenu (RFT). Stres oksydacyjny jest związany z zaburzeniem równowagi między produkcją i aktywnością reaktywnych form tlenu a mechanizmami obronnymi organizmu odpowiedzialnymi za ich eliminację.

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