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THE INFLUENCE OF ARONIA MELANOCARPA BERRIES EXTRACT ON HYDROGEN PEROXIDE CONCENTRATION IN THE SUBMANDIBULAR GLANDS OF A RAT EXPOSED TO CADMIUM

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Rationale. Cadmium is one of the main toxic pollutants of the natural environment and food. This element is characterized by strong cumulative properties and high toxicity. Exposure to this metal may lead to damage to various organs and tissues including salivary glands. The mechanism of cadmium toxicity is related, at least partially, with pro-oxidative properties of this metal resulting in the development of oxidative stress. Recent studies show that polyphenol-rich extract from the berries of *Aronia melanocarpa* may protect from pro-oxidative action of cadmium.

Objective: The aim of the study was to examine the influence of administration of *Aronia melanocarpa* berries extract on the concentration of hydrogen peroxide, as a reactive oxygen specie, in the submandibular glands of a rat exposed to cadmium.

Material and methods. The concentration of hydrogen peroxide in the submandibular gland homogenates of Wistar rats treated for 3 and 10 months with 0,1 % *Aronia melanocarpa* berries extract and/or cadmium (1 or 5 mg Cd/kg diet), as well as control animals, was measured. The concentration of hydrogen peroxide was assayed with the use of spectrophotometric diagnostic kit (Cayman Chemicals, USA).

Results and discussion. The exposure to 1 mg Cd/kg diet increased hydrogen peroxide concentration in the submandibular glands after 10 months, whereas at the higher exposure (5 mg Cd/kg diet) the concentration of this reactive oxygen specie was increased already after 3 months. The administration of *Aronia melanocarpa* extract under the exposure to cadmium completely prevented this heavy metal-induced increase in the concentration of hydrogen peroxide.

Conclusions. Low-level and moderate repeated exposure to cadmium leads to the generation of reactive oxygen species in the submandibular glands. The administration of a polyphenol-rich extract from the berries of *Aronia melanocarpa* under low and moderate exposure to cadmium protects from enhanced generation of reactive oxygen species in the submandibular glands and in this way may prevent oxidative stress development and oxidative damage to these glands.