EGG WHITE HYDROLYSATE PREVENTS THE OXIDATIVE STRESS AND THE INCREASE IN BLOOD PRESSURE INDUCED BY CHRONIC MERCURY EXPOSURE

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Cardiovascular system is an important target of chronic exposure to mercury (Hg), which produces oxidative stress, endothelial dysfunction and increase vascular reactivity in arteries. In this context, egg white hydrolysate (EWH) has shown biological activities, such as antioxidant and anti-hypertensive and may be potentially useful on several disorders, like as cardiovascular toxicity. Thus, the aim of our study was to investigate the effects of EWH on the vascular effects caused by chronic intoxication by low concentrations of Hg. Four groups of 8-week-old Wistar male rats (200 g) were treated for 60 days with: a) Control (saline solution, i.m.); b) Mercury (HgCl₂) - mercury chloride (1st dose 4.6 µg/kg, subsequent doses 0.07 µg/kg/day, i.m. – Wiggers et al., 2008); c) Egg White Hydrolysate (1 g/kg/day, gavage – Miguel et al., 2007); d) Mercury plus Egg White Hydrolysate. Sistolic (SBP) and Diastolic (DBP) Blood Pressure were assessed invasively through the carotid artery cannulation. Lipid peroxidation and antioxidant capacity in plasma were analyzed by the TBARS (Ellman, 1952, modified by Rodriguez-Martínez y Ruiz-Torres, 1992) and by ORAC (Ou et al. 2001, modified by Dávalos et al., 2004). Data were analyzed by Analysis of Variance (ANOVA) followed by a Bonferroni test. Mercury treatment increased SBP (Ct:120.1±1.9; Hg:135.2±2.8; Pep:124.5±1.5; PepHg:122.0±2.2*; mmHg, n=6, *p<0.05 vs Ct; #p<0.05 vs Hg) and MDA levels (Ct:0.75±0.03; Hg:0.87±0.05; Pep:0.67±0.04; PepHg:0.69±0.03*; µmol/ml plasma, n=8, *p<0.05 vs Ct; #p<0.05 vs Hg) and reduced antioxidant capacity (Ct:12.72±0.26; Hg:11.32±0.30; Pep:13.34±0.42; PepHg:12.67±0.60*, µmol Trolox/ml plasma, n=8, p<0.05 vs Ct; #p<0.05 vs Hg). EWH prevented the increase in SBP and MDA and the reduction in antioxidant capacity. In conclusion, chronic mercury exposure at low doses leads to an increase in SBP and oxidative stress. Egg White Hydrolysate provides cardiovascular protection against these effects, demonstrating a beneficial therapeutic potential.

Key-words: Mercury, Egg White Hydrolysate, Blood Pressure.
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