Malnutrition Alters the Oxidative Balance in the Heart Tissue from Different Ages?

Freitas, C.M.¹; Nascimento, L.C.P. ¹; Liu, Y.U.H. ²; Silva Filho, R.C. ²; Costa, P.R.F.²; Pedroza, A.A.S.²; Ferreira, D.J.S.³; Lagranha, C.J.²; Fernandes, M.P. ².

¹ Dep. de Nutrição, CAV-UFPE, PE; ² Dep. de Educação Física e Ciências do Esporte, CAV-UFPE, PE; ³ Dep. Neuropsiquiatria e Ciências do Comportamento, CCS – UFPE, PE; Brazil.

During the critical period of development, the body is likely to be influenced by external factors, such as malnutrition, and may induce biochemical changes in tissues. Thus our aim was evaluate the effects of the perinatal malnutrition in different ages on the level of lipid peroxidation and the activity of the antioxidant enzymes in heart tissue. Were used male Wistar rats, submitted to malnutrition during gestation and lactation with a diet containing 8% and 17% casein. After lactation (21 days), pups began receiving Labina. The values were expressed in Mean and Standard Deviation (X±SD) being the 5% significance level used (p <0.05). Our results showed that in 30 days of age occurs an increase in lipid peroxidation in the malnourished group (C= 0.42±0.006; M= 0.98±0.011 nmol/mg prot). Regarding to the antioxidant enzymes activity wasn’t observed difference in the activity of superoxide dismutase (C= 3.7±0.34; M=3.7±0.10 U/mg prot) and glutathione reductase (C= 0.010±0.001; M= 0.009±0.001 nmol/mg prot), although was observed a decrease in catalase (C= 1.45±0.11; M= 1.04±0.04 nmol/min/mg prot). Our data also showed that in 100 days of age occurs an increase in lipid peroxidation in the malnourished group (C= 4.6±0.8; M= 7.0±0.8 nmol/mg prot) and reduction in the activity of superoxide dismutase (C= 3.37±0.39; M= 2.09±0.39 U/mg prot), catalase (C= 0.686±0.054; M= 0.420±0.030 nmol/min/mg prot) and glutathione reductase (C= 18.0±3.1; M= 10.9±1.1 nmol/mg prot). These results suggest that perinatal malnutrition promoted a deficiency in antioxidant capacity favoring the oxidative stress since early age, characterizing a significant unbalance in oxidative state in the heart.

Word Keys: Ages; Heart; Malnutrition perinatal; oxidative balance.

Supported by: FACEPE