PHYSICAL TRAINING AND FISH OIL SUPPLEMENTATION ON OXIDATIVE BALANCE IN KIDNEY CORTEX OF ADULT RAT


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Introduction: Oxidative stress is one of the possible mechanism involved in kidney failure. Studies suggest that omega-3 polyunsaturated fatty acids in fish oil and physical exercise induce beneficial effects in various tissues, especially kidney, by decreasing the levels of the oxidative stress. Aim: Investigate whether ω-3 present in fish oil supplementation, along with moderate exercise training improves the oxidative balance in adult rat kidney cortex. Materials and methods: Wistar male rats were divided into four groups according to the treatment received, as follows: Vehicle/Sedentary (V/S; n=8); Vehicle/Exercised (V/E; n=8); Fish oil/Sedentary (FO/S; n=8); Fish oil/Exercised (FO/E; n=8). At 90 days of life animals were submitted concurrently to exercise and supplementation over a period of 4 weeks. At 120 days was evaluated oxidative stress marker: Malondialdehyde-MDA (Buege, 1979), protein oxidation by carbonyls levels (Levine, 1990), activity of superoxide dismutase-SOD (Misra, 1972), catalase-CAT (Aebi, 1984), glutathione S-transferase-GST (Habig, 1974), reduced glutathione-GSH (Hissin, 1976) total sulfhydryl-SH. The procedures followed the recommendations of the Brazilian Committee of Animal Experimentation and approval of the Ethics Committee Center of Biological Sciences, UFPE (Protocol#:23076.016320/2012-45). Results: Fish oil supplementation decrease MDA levels (FO/EvsV/E: decrease 63%; p<0.05) and CAT activity (FO/SvsV/S: decreased 32%; p<0.05). However fish oil increase GSH levels (FO/EvsV/E: increased 53%; p<0.05) (FO/EvsFO/S: increased 46%; p<0.05) and sulfhydryl-SH levels (FO/EvsV/E: increased 875%; p<0.05) (FO/EvsFO/S: increased 773%; p<0.05). The other markers of oxidative damage, Carbonyls levels and activity of SOD, GST, showed no difference. Conclusions: Our data suggest that the combined treatment improves in rat kidney antioxidant capacity that can prevent the deleterious effect of oxidative stress. Acknowledgements: FACEPE. Key words: physical training, fish oil supplementation, renal oxidative stress.