Effects of single weekly bout of exercise on cell proliferation during the rat colon carcinogenesis #77

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There is evidence that the risk of colon cancer is reduced by appropriate levels of physical exercise. However, the effects of single weekly bout of exercise are largely unknown. Our aim was to verify the effects of exercise once a week (1d-wk^{-1}) and daily exercise training (5d-wk^{-1}) in rats treated with the carcinogen 1-2- Dimethyl-hydrazine (DMH). Forty-two *Wistar* rats were used in the experiment. The groups G1 and G2 were sedentary (controls), the groups G1A and G2A were submitted 1d-wk^{-1} of swimming, and G1B and G2B were submitted 5d-wk^{-1} of swimming training for 8 weeks. The groups G2, G2A and G2B were treated with DMH two weeks after the start of exercise protocols. The rats were sacrificed three days after the swimming protocols and the colon was processed for immunohistochemistry with staining of proliferating cell nuclear antigen (PCNA). A statistical analysis was performed by Anova test, followed by a *post hoc* Tukey's (p<0.05). The G2B presented a significant reduction of the PCNA-Li (PCNA-Labeling index) of the epithelium of the intestinal mucosa when compared with the G2 (p<0.001), showing a PCNA-Li similar to the group G1. The group G2A presented a reduction of the PCNA-Li when compared with the group G2 (0.05436 to 0.01760, p<0.001); however it still remained higher than group in the group G1. From our findings, we conclude that a single weekly bout of exercise significantly attenuate the DMH-related increase in epithelial cell proliferation during the rat colon carcinogenesis, but in a less intensive proportion than the daily exercise training.

Key words: episodic exercise; colon cancer; 1-2- Dimethyl-hydrazine.