

The aerobic physical training and chia reduce lipogenesis by androgenic pathway in the prostate of Wistar rats

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The poor lifestyle and elevated high fat diet (HF) intake contribute to prostate morphological changes and diseases. The lipids have been associated with prostate diseases, but not all animal fat is disease-promoting as omega-3 (n-3), related to reduction of some cancers types. The sterol regulatory element-binding protein-1 (SREBP's) family activate the expression of genes associated with lipids, is involved in transcriptional regulation of androgen receptor (AR). The AR, activated by the binding of testosterone, has the main function of regulating gene expression, development and cellular maintenance. The exercise use the fatty acids as fuel during execution, protecting against prostate disorders, able to modulate the lipid pathway during practice. The aim of study is evaluate the effects of aerobic physical training and omega-3 supplementation in prostate of Wistar rats supplemented with high fat diet. 35 Wistar rats were divided in 7 groups: CT- received standard diet and water; HF- only high fat diet and water; HF+n-3- received high fat diet and fish oil; HF+Ex- high fat diet and performed physical training; HF+n-3+Ex- received high fat diet, n-3 and performed physical training; HF+Chia- received high fat diet and chia oil; HF+Chia+Ex- high fat diet intake, chia oil and did physical training. The HF containing roasted peanuts, milk chocolate and crackers. The n-3 was applied by gavage as well as water in all groups to induce the same stress. The swimming training was 3 times/week, 30 minutes and approved by CEUA-3962. The One-way ANOVA with a post-hoc Tukey test was used to statistically analyze, the intensity of SREBP-1 was examined using Image-J software and the AR quantification were analyzed in 10 sections of ventral prostate. The SREBP-1 expression were most pronounced in HF group ($11,58 \pm 0,31$) than others. The HF+Chia and HF+n-3 groups reduced the SREBP-1 expression ($9,92 \pm 0,19$), ($9,82 \pm 0,83$) consecutively, but did not present statistical differences. On the other hand, the HF+Chia+Ex group reduced SREBP-1 ($10,19 \pm 0,45$) compared to HF+Ex group ($11,39 \pm 0,27$) and similar values were found in CT group ($10,19 \pm 0,42$). The AR expression in HF group reduced the expression ($43,02 \pm 6,05$) compared to the other animals. There are an increased in HF+Chia ($68,02 \pm 3,79$) and HF+n-3 groups ($63,28 \pm 4,79$) of AR labeling in relation to CT group ($58,45 \pm 6,19$). When associated with exercise, the values were increased HF+Chia+Ex ($83,30 \pm 3,94$) and HF+n-3+Ex ($77,6 \pm 2,91$). Thus, the chia associated to aerobic physical training modulates the AR activation, that regulates the SREBP-1 expression. This study was financed in part by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brasil (CAPES) - Finance Code 001.

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