

## ABSTRACT

### EFFECTS OF SEVEN CONSECUTIVE DAYS OF AEROBIC TRAINING AND LIPECTOMY ON INSULIN SENSITIVITY AND ADIPOSITY OF RATS FED A HIGH-FAT DIET

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Increased visceral adipose tissue (VAT) may account for the impairment in peripheral and hepatic insulin sensitivity (IS). It has been hypothesized that the partial removal of VAT known as lipectomy (L) could result in the improvement, while a re-growth of the excised tissue and/or a compensatory growth of non-excised depots seem to occur. To investigate whether or not VAT removal and exercise affect IS and adiposity 36 male Wistar rats were fed a high-fat diet and assigned to 4 experimental groups: EL (exercised), ES (sham-lipectomized), CL (control-sedentary), and CS; animals were submitted to L and/or exercise training. Body weight and food intake were recorded weekly. Fasting glucose and glucose tolerance were assessed pre and post-interventions. HOMA Index, body fat content, PPAR $\gamma$ , PPAR $\alpha$  e TNF- $\alpha$  mRNA and PGC1- $\alpha$  protein expression were assessed post-interventions. L group showed increased food intake post-L ( $p<0,05$ ). CL group presented worsening on

glucose tolerance ( $p<0,03$ ). ET and ES showed lower fast insulin ( $p<0,00$ ) and EL group showed better IS ( $p<0,04$ ). There were no significant difference on body fat ( $p>0,1$ ). EL and CL groups showed higher PPAR $\gamma$  mRNA on VAT compared to CL and ES, EL showed decreased PPAR $\gamma$  mRNA on skeletal muscle compared to CS ( $p<0,05$ ). CL group showed greater TNF- $\alpha$  mRNA ( $p<0,05$ ) and greater PGC1- $\alpha$  protein expression compared to EL and CS ( $p<0,05$ ). Our results showed that short-term swimming training improved insulin action and, in association with L improve IS. Moreover, lipectomy has induced increased food intake which may be related with an increase in adiposity at this group.

Keywords: visceral adipose tissue, food pattern, HOMA index, glucose tolerance