ACUTE PHYSICAL EXERCISE MODIFY NUCLEOTIDASIC ACTIVITY IN THE BLOOD SERUM OF MALE SEDENTARY INDIVIDUALS

Moritz, C.E.J.\textsuperscript{1,3}; Teixeira, B.C.\textsuperscript{2}; Rockenbach, L.\textsuperscript{3}; Reischak-Oliveira, A.\textsuperscript{2}; Battastini, A.M.O.\textsuperscript{1,3}; Casali, E.A.\textsuperscript{3,4*}

\textsuperscript{1}Programa de Pós-Graduação em Medicina: Ciências Médicas, Faculdade de Medicina, UFRGS, Porto Alegre, RS, Brazil; \textsuperscript{2}Laboratório de Pesquisa do Exercício (LAPEX), Escola de Educação Física (EsEF), UFRGS, Porto Alegre, RS, Brazil; \textsuperscript{3}Laboratório de Enzimologia Aplicada ao Sistema Purinérgico, Departamento de Bioquímica, Instituto de Ciências Básicas da Saúde, UFRGS, Porto Alegre, RS, Brazil; \textsuperscript{4}Laboratório de Estudos Sobre as Alterações Celulares e Teciduais, Departamento de Ciências Morfológicas, Instituto de Ciências Básicas da Saúde, UFRGS, Porto Alegre, RS, Brazil.

\textsuperscript{*}E-mail: eacasali@gmail.com

INTRODUCTION AND OBJECTIVES: Purinergic signalling is responsible for influencing physiological and pathological situations through hydrolysis of nucleotides by nucleotidases. Physical exercise could be a non pharmacological conduct in many diseases, however is unclear its importance in this extracelluar signaling. The aim of this study is analyze how is the behavior of these enzymes in blood serum of individuals exposed to acute physical exercise.

MATERIALS AND METHODS: Seven healthy sedentary male subjects with a mean age 26.1±2.7 were selected. All procedures were approved by ethics committee of UFRGS (nº 760.528) and the free consent was obtained from all individuals. Subjects performed an initial evaluation to collect clinical, anthropometric data and maximal oxygen ($\text{VO}_{2\text{MAX}}$) uptake were defined for ergospirometry system open-circuit gas analysis. Seven days after the evaluation, all volunteers performed 30 minutes of aerobic exercise on treadmill with 70% of maximal heart rate. Blood samples were collected pre- and post-exercise by venipuncture and centrifuged to obtain serum. ATPase, ADPase and 5'-nucleotidase activities were quantified by the release of Pi released from ATP, ADP or AMP hydrolysis. Specific activity are expressed as nmol Pi/min/mg protein. Phosphodiesterase activity was assessed using p-Nph-5'-TMP as substrate and the specific activity are expressed as nmol p-nitrophenol/min/mg protein.

RESULTS AND CONCLUSIONS: ATP (0.173±0.014 vs. 0.535±0.038), ADP (0.194±0.038 vs. 0.736±0.123) and AMP (0.260±0.027 vs. 0.476±0.077) hydrolysis increased from pre from post-exercise respectively. Phosphodiesterase activity was increased by exercise (3.27±1.01 vs. 5.70±0.95).

Physical exercise possibly exert modulatory effects in nucleotidasic activities. Since it is a preliminary result, we still need bigger sample size to better define what kind of modulatory effects are these. More studies are necessary to define effects of exercise in purinergic signaling.

ACKNOWLEDGEMENTS: CAPES, CNPq.

KEY WORDS: acute physical exercise, nucleotidasic activities, purinergic signnalling.