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Exercise induces histone H4 hypoacetylation status in peripheral blood of schizophrenic individuals

Caroline Lavratti¹, Nathan Ono de Carvalho¹, Ivy Reichert¹, Jordana Leczow de Oliveira¹, Jerri Ribeiro¹, Pedro Dal Lago², Luciane Wagner¹ and Viviane Rostirola Elsner¹¹Methodist University Center IPA, Brazil²Federal University of Health Sciences, Brazil

Approximately 1% of the world's population is affected by schizophrenia (SZ), a chronic and debilitating neurodevelopmental disorder. Recent evidences have been suggesting a pivotal role of epigenetic imbalance on SZ physiopathology. Interestingly, exercises are able to modulate epigenetic mechanisms in different populations, however, there are no reports conducted with SZ patients. Then, the present study sought to investigate the effect of exercise on global histone H4 acetylation levels in peripheral blood of SZ individuals. This study was approved by the Research Ethics Committee of the Centro Universitário Metodista do IPA (no 1.243.680/2015). The participants (n=15) were submitted to a concurrent exercise protocol (CEP) during 90 days, 3 times a week for 60 minutes. In order to evaluate the acute and chronic exercise outcomes, blood samples were collected in different time points: pre, 30, 60 and 90 days after intervention. All analysis was done in leukocytes using specific commercial kits, according to the manufacturer's instructions. It was observed that a significant decrease in global H4 histone acetylation levels 30 days (4160.74 ± 1402.58 ng/mg of protein; $p=0.005$), 60 days (4979.32 ± 1849 ng/mg of protein; $p=0.007$) and 90 days (6528.61 ± 4893.95 ng/mg of protein; $p=0.030$) after intervention. Our findings demonstrated that CEP can induce a hypoacetylation status in leukocytes of SZ individuals, an indicative of reduced transcription and expression of specific genes.

Biography

Caroline Lavratti has graduated in Physiotherapy from Universidade Regional Integrada URI, Campus de Erechim, Brazil and now she is a Master's student of the Centro Universitário Metodista IPA, Brazil. She is a Member of the research group "Interdisciplinary Group of Study on Epigenetics Applied to Health and Disease" coordinated by Professor Dr. Viviane Elsner. She is investigating the effects of physical exercise on the modulation of epigenetic mechanisms in schizophrenic individuals.

carollavratti@yahoo.com.br

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