ANNALS OF RESEARCH IN SPORT AND PHYSICAL ACTIVITY

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Publicado por: Imprensa da Universidade de Coimbra

URL persistente: URI:<http://hdl.handle.net/10316.2/44107>

DOI: DOI:https://doi.org/10.14195/2182-7087_ex2018_44

Accessed : 26-Apr-2023 14:55:13

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ANALYSIS OF MODERATE AEROBIC EXERCISE ON THE GUT MICROBIOTA FROM MICE INDUCED TO OBESITY WITH HIGH FAT DIET.

Filipe M. Ribeiro¹; Aline P. Castro²; Camila F. A. Ribeiro²; Jeesser A. Almeida³; Octavio L. Franco¹; Bernardo A. Petriz⁴

Obesity is a multifactor disease associated with a high rate of mortality and morbidity worldwide. The gut microbiota is shown to be a key factor in the pathogenesis of obesity influencing the host metabolism. Diet and exercise were shown to modulate the gut microbiota⁽¹⁻³⁾, however, this relation is still poorly understood. The present study was conducted to better understand the effect of aerobic exercise on the gut microbiota in animal model submitted to an obesity-inducing diet. Forty isogenic male C57Bl/6J mice were divided into two groups; low-fat diet (10%-LF, n=20) and high-fat diet (60%-HFD, n=20). After 16 weeks, all animals were submitted to four weeks of acclimatization and exercise adaptation to the treadmill apparatus. Furthermore, mice were divided into four groups; low-fat training (LFE n=10), low-fat control (LFC, n=10), high-fat training (HFE, n=10) and, high-fat control (HFC, n=10). All animals were submitted to a maximal velocity incremental test (Vmax) for assessing the training intensity, set as 50% of Vmax, during 30 min.d⁻¹, 5 days/week, for 8 weeks. For transcriptomic analysis, fecal content was collected prior to pre-dietary control, prior to the training program and after 8 weeks of training. Next Generation Sequencing Illumina MiSeq System of the 16S RNAr was used to analyze the effect of high-fat diet and training on the gut microbiota. The HF diet group presented a significant weight gain compared to the LF group, (~8,71g, P<0.0001). Training resulted in weight loss of the HFT group (39,1g, P<0.05), compared to the HFC group (44,3g, P<0.05). Moreover, Vmax in LFT group was improved after 4 weeks of training (26.1 m.min⁻¹, P<0.05), also reaching a longer distance (375.4m, P<0.01) compared to the LFC group (240m, P<0.0001). All DNA samples were successfully amplified. NGS is still in analysis, however, physiologic

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data indicated that the proposed exercise program didn't lead to improvement in aerobic capacity in the HFE group. Despite the weight reduction due to training, the continuous HF diet may have negatively influenced animal's performance.

ACKNOWLEDGEMENTS

University Center UDF, Catholic University of Brasília, CNPq and FAP-DF

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