ANNALS OF RESEARCH IN SPORT AND PHYSICAL ACTIVITY

Eritoneal macrophages and adipose tissue macrophages polarization in obese mice: role of exercise training and PPAR-

Autor(es): Silveira, Loreana; Amorim, Luana Biondo; Abílio, Alexandre; Souza, Camila Oliveira; Lima, Edson A.; Batatinha, Helena; Neto, José Cesar Rosa; Lira, Fábio Santos

Publicado por: Imprensa da Universidade de Coimbra

URL persistente: URI:<http://hdl.handle.net/10316.2/44096>

DOI: DOI:https://doi.org/10.14195/2182-7087_ex2018_33

Accessed : 26-Apr-2023 14:51:19

A navegação consulta e descarregamento dos títulos inseridos nas Bibliotecas Digitais UC Digitalis, UC Pombalina e UC Impactum, pressupõem a aceitação plena e sem reservas dos Termos e Condições de Uso destas Bibliotecas Digitais, disponíveis em <https://digitalis.uc.pt/pt-pt/termos>.

Conforme exposto nos referidos Termos e Condições de Uso, o descarregamento de títulos de acesso restrito requer uma licença válida de autorização devendo o utilizador aceder ao(s) documento(s) a partir de um endereço de IP da instituição detentora da supramencionada licença.

Ao utilizador é apenas permitido o descarregamento para uso pessoal, pelo que o emprego do(s) título(s) descarregado(s) para outro fim, designadamente comercial, carece de autorização do respetivo autor ou editor da obra.

Na medida em que todas as obras da UC Digitalis se encontram protegidas pelo Código do Direito de Autor e Direitos Conexos e demais legislação aplicável, toda a cópia, parcial ou total, deste documento, nos casos em que é legalmente admitida, deverá conter ou fazer-se acompanhar por este aviso.

ANNALS OF
**RESEARCH IN SPORT
AND
PHYSICAL ACTIVITY**

ERITONEAL MACROPHAGES AND ADIPOSE TISSUE MACROPHAGES POLARIZATION IN OBESE MICE: ROLE OF EXERCISE TRAINING AND PPAR- γ

Loreana Silveira¹; Luana Biondo Amorim²; Alexandre Abílio²; Camila Oliveira Souza²;
Edson A. Lima²; Helena Batatinha²; José Cesar Rosa Neto²; Fábio Santos Lira¹

KEYWORDS: Macrophages, exercise, inflammation, transcriptional factor.

BACKGROUND

Moderate exercise training is increasingly consolidated as non-pharmacological therapy for the treatment and prevention of low-grade chronic inflammatory diseases. Macrophages are directly involved in the control of the inflammatory response and transcription factors such as peroxisome proliferator-activated receptor gamma (PPAR- γ) are able to regulate the immune-metabolic response targeting the increase of alternatively activated macrophages or M2, characterized by the secretion of anti-inflammatory cytokines. From the possibility of macrophage phenotype alteration due to the exercise, we intend to assess whether PPAR- γ deletion in myeloid cells can lead to impairment in the anti-inflammatory response of the exercise in a diet-induced state of low-grade inflammation.

• 113

METHODS

two animal strains were used: CreLox for PPAR- γ (KO) in myeloid cells and litter control animals (WT). Each genotype was divided into 3 subgroups 1) chow diet sedentary; 2) high fat diet sedentary (HF) 3) high fat diet and moderate intensity training (HFT). Were evaluat-

¹ Exercise and Immunometabolism Research Group, Department of Physical Education, University of the State of São Paulo, UNESP, Presidente Prudente, SP, Brazil.

² Immunometabolism Research Group, Institute of Biomedical Sciences, University of São Paulo (USP) São Paulo, SP, Brazil.

Email: loreana_loly@hotmail.com; batatinha.helena@usp.br

ed the metabolic profile of the animals, the inflammatory profile of peritoneal macrophages and subcutaneous adipose tissue through cytokine secretion/content (TNF- α , IL-6 and IL-10) and flow cytometry. The experimental protocol lasted 12 weeks (4w diet + 8w diet and training).

RESULTS

Peritoneal macrophages from KO mice seem to present a tendency to be proinflammatory as observed in increased TNF- α in non-stimulated and TNF- α and IL-6 in LPS-stimulated cells. The obesity induced by high fat diet did not alter inflammatory markers (figure 1) despite of increased IL-6 and IL-1 β production in culture from WT group. Training by itself improved inflammatory parameters especially in WT animals also reducing TNF- α and IL-6 in LPS-stimulated cells from both genotypes. M1 markers were elevated in HFT animals (figure 1). On the other hand, adipose tissue-macrophages presented an anti-inflammatory profile at baseline conditions, increasing their cytokine content in HF WT animals and TNF- α , IL-1 β and IL-10 in KO mice. Exercise was able to reduce all proinflammatory cytokines in WT and only TNF- α and IL-1 β in KO, otherwise, MCP-1 increased in trained KO mice as confirmed by M1 markers elevation.

CONCLUSION

Adipose tissue-macrophages appear to be more susceptible to variations such as diet and/or exercise in the M1 or M2 polarization dynamics than peritoneal macrophages, whereas PPAR- γ in these infiltrated macrophages seems essential for exercise-mediated anti-inflammatory effects.