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Effects of glutamine supplementation associated with moderate exercise in neutrophils function in elderly women

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EFFECTS OF GLUTAMINE SUPPLEMENTATION ASSOCIATED WITH MODERATE EXERCISE IN NEUTROPHILS FUNCTION IN ELDERLY WOMEN

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KEYWORDS: CD 62L, phagocytosis, reactive oxygen species, cytokine, maltodextrine supplementation.

Aging changes the immune system as well as most physiological functions. Neutrophils are innate immune cells and are known as the body's first line of defense against infection and inflammation. Studies demonstrated that neutrophil functions can be altered by aging, thus strategies to prevent these losses have been studied. Glutamine and exercise are modulators of neutrophil function, but there are no studies in the literature on their effects on the elderly. The objective of the present study is to evaluate the effect of chronic supplementation with maltodextrin associated with glutamine on the neutrophil function from active and elderly women practicing supervised moderate physical exercise. Forty five healthy elderly volunteers, aged between 60 and 80 years, were grouped into two groups: Control (Active) (n = 24) and Exercise (n = 21). These groups were subdivided into 2 supplemented groups: Maltodextrin (M) receiving 20 g of Maltodextrin / day and Glutamine-associated maltodextrin (MGLn) group which disrupted 10 g of L-glutamine + 10 g of maltodextrin / day, both diluted in 250 ml of water. Peripheral blood sample were collected before and

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after chronic supplementation performed for 30 days. The following neutrophil functions were evaluated: expression of the CD62L adhesion molecule, migration using transwell plate; Phagocytosis by quantification of the ingestion of opsonized zymosan particles; Intra and extracellular production of reactive oxygen species (ROS) by luminescence assay using lucigenin and intracellular production of ROS by flow cytometry. In addition, cytokine production was also determined using the CBA (Cytometric Bead Array) method by flow cytometry. The data were analyzed using software SPSS version 20, non-parametric test Kruskal Wallis, as well as R for differentiation between pairs, considering a level of significance of 95%. MGIn supplementation increased CD62L expression in the Exercised Group comparing to Control, and increased IL10 production by neutrophils stimulated with LPS; the pro inflammatory cytokines were not changed after MGIn supplementation. On the other hand, supplementation with M increased IL-1 β production (224.3%) in the Exercised Group comparing to Control and increased IL-8, TNF- α and IL6 production by neutrophils stimulated with LPS. The ROS production intracellular (157.3%) and extracellular (169%) was also increased in neutrophils from Exercise Group supplemented with MGIn comparing to Exercise Group supplemented with M. We concluded that supplementation with MGIn prevented the increase of the inflammatory cytokine production and stimulated neutrophil function only in the elderly women practicing moderate supervised exercise.

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