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Dietary supplementation with two Lamiaceae herbs- (oregano and sage) modulates innate immunity parameters in Lumbricus terrestris

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ABSTRACT

Introduction Lamiaceae herbs have are well known for their immunomodulatory effects, however, the mechanism by which they effect innate immune system is not clearly understood. Objective The effect of dietary supplementation with two Lamiaceae herbs (oregano and sage) modulation of on innate immunological parameters was investigated in Lumbricus terrestris. Materials and Methods Animals were fed (ad libitum) on herbs supplemented diet [(0.1% (w/v) and 0.5% (w/v)] for 6 days. Changes in immune competent cell counts, viability, and relative neutrophil-like cell counts were determined in response to herb treatment. Changes in nitric oxide, phagocytic activity, and respiratory burst index were also determined in response to herb treatment relative to control. Additionally, effect of herb co-treatment cyclophosphamide (50 mg/kg-BW) induced immunosuppression was also evaluated. Results Our results suggested abrogation of CP-induced immunosuppression in response to co-treatment with herbs. Significant increase in nitric oxide-mediated immune- competent cell counts, viability, and differentiation into neutrophil-like cells were observed in response to dietary supplementation with Lamiaceae herbs. Significantly higher phagocytic activity relative to control was also noted in response to dietary intake of oregano and sage. However, the respiratory burst index did not increase exponentially in response to herb treatments, suggesting a potential enhancement in pathogen recognition and antioxidant defenses. Conclusion Lamiaceae herbs may have potential immune-modulatory properties important for human health and merits further investigation.

KEYWORDS

Cyclophosphamide . immunosuppression . innate immunity . respiratory burst . Zingiberaceae herbs

REFERENCES