ZINC MODULATION OF MACROPHAGES INTERLEUKIN 1 GENE EXPRESSION AND SECRETION

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Trace elements particularly Zn, have a great influence in the development and maintenance of the immune system. The role of Zn in the improvement of impaired immunity is well documented. The macrophage appears to be more susceptible to Zn intervention. IL-1 secretion is characteristic of macrophage activation, thus its modulation by Zn could result in the immune response elevation. We addressed this question by designing a model of BALB/c mice supplemented with Zn (500 mg/L) during gestation, lactation and postweaning. We investigated the possibility of zinc modulation of IL-1.

We report that Zn can enhance the IL-1 gene expression on macrophages activated by LPS. Kinetic studies of IL-1 gene expression evaluated by RT-PCR, showed a maximum level of induction 4h after treatment with zinc, followed by a decrease to basal levels within 10h.

IL-1 secretion evaluated by an ELISA assay, showed an increment in LPS stimulated peritoneal macrophages supernatant after the lactation period (6 weeks treatment) with a drop after the postweaning period (9 weeks treatment). IL-1 serum concentrations showed a significant increment after 6 weeks of zinc supplementation with no variation after 9 weeks.

Results suggest an important role of zinc in macrophages stimulation, which carefully monitored could result in modulation of the monokine secretion and even modification of its seric concentrations.