Conference presentation

Study of the effects of *Silicea terra* and *Zincum metallicum* in various dilutions on the oxidative activity of macrophages *in vitro*

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Abstract

Silica (silicon dioxide) is found in nature, being composed of 2 chemical elements abundant on the Earth's crust, oxygen and silicon. As homeopathic medicine, silica is used for treatment of chronic ulcers due to its ability to modulate the macrophage activity. Zinc is a cofactor of several immune mediators, especially thymulin, which is also capable of modulating the macrophage activity and recruitment of B1 cells in mice. In the present study, we assessed the homeopathic medicines *Silicea terra* and *Zincum* in an *in vitro* experimental model to determine their effects on the interaction between RAW 264.7 macrophages and BCG (*Bacillus Calmette-Guérin*). In this step of the study, we assessed oxidative activity through measurement of hydrogen peroxide and nitrite/nitrate in the cell culture supernatant after 24 hours of treatment. Several homeopathic potencies were used for both drugs (6cH, 30cH, 200cH). The tests were performed in duplicate, and the data were analyzed by means one-way ANOVA. The results show no effect on nitric oxide (NO) production, but reduction of hydrogen peroxide production ($p \leq 0.001$) after treatment with the vehicle (0.03% alcohol). Such reduction was reversed with treatments *Silicea terra* 30cH and *Zincum metallicum* 30cH ($p \leq 0.001$). Treatment with *Silicea terra* 200cH induced significant reduction of hydrogen peroxide production, even when compared to the vehicle ($p \leq 0.005$). Taken together, the results indicate that only treatment of BCG-challenged macrophages with *Silicea terra* 200cH was able to significantly reduce the oxidative activity of these cells after 24 hours of incubation. Since NO production *in vitro* usually occurs after 96 to 120 hours of incubation, one might infer that the negative result obtained in the present study might be associated with the time-point of assessment. Other aspects of the macrophage-BCG interaction are still under evaluation.

Keywords: Homeopathy, macrophages, *Zincum metallicum*, *Silicea terra*, BCG

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