

Assessing the bioactivity of *Boswellia sacra* compounds on human immune cells

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ABSTRACT

Background: Frankincense, a dried resin from *Boswellia* trees, have been shown empirically to have immune regulatory activity. Few scientific evidences have been reported, mainly using *Boswellia serrata* resin and in animal models. The most active compound has been identified to be the boswellic acid. But boswellic acid is usually extracted from the solid resin using toxic solvents we want to avoid for human usage. We also believe that natural mixture of compounds may have better activity as compared to the pure, synthetic boswellic acid. The aim of this study is to analyses immunoregulatory activity of *Boswellia sacra* natural extract using nontoxic extraction process, on human leukocytes.

Methods: the Frankincense from *Boswellia sacra* has been processed Controlled Differential Sieving Process (CDSp). Active compound extraction were tested with different nontoxic, buffers. The Boswellic acid content was analyzed using Gaz Chromatography. Extracts were tested on human Peripheral blood leukocytes measuring their effect on bacteria induced oxydative bust using 123 DiHydroRhodamine oxidation (DHR123) or on specific T cell activation using T cell Receptor ligand. Immune responses were analyzed by flow cytometry.

Results: the solubilizing experiments have shown the Di Methyl Sulfoxide (DMSO) gives the best extraction of compounds out of Frankincense ultrafine powder without any toxicity on cells. Few fractions of ultrafine powder have shown an improved yield in boswellic acid extraction. The preliminary results show that Frankincense extract reduce the inflammatory reaction in terms of bacterial induced production of free radicles, in a dose dependent manner. Our results also evidenced some effects on the T cell reaction to Physiological stimulus.

Conclusion: Our preliminary results show the feasibility and high added value of Flow cytometry multiparametric analysis in measuring immunoregulatory, anti-inflammatory and antioxidative activity of Frankincense of bioproducts and confirmed the added value of Controlled Differential Sieving Process of *Boswellia Sacra* resin.

