Chemistry and Immunomodulatory Activity of Frankincense Oil

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The yield of steam distillation of frankincense essential oil (3%); and its physicochemical constants were determined. Capillary GC/MS technique was used for the analysis of the oil. Several oil components were identified based upon comparison of their mass spectral data with those of reference compounds published in literature or stored in a computer library. The oil was found to contain monoterpenes (13.1%), sesquiterpenes (1%), and diterpenes (42.5%). The major components of the oil were duva-3,9,13-trien-1,5α-diol-1-acetate (21.4%), octyl acetate (13.4%), *o*-methyl anisole (7.6%), naphthalene decahydro-1,1,4a-trimethyl-6-methylene-5-(3-methyl-2-pentenyl) (5.7%), thunbergol (4.1%), phenanthrene-7-ethenyl-1,2,3,4,4a,5,6,7,8,9,10,10a-dodecahydro-1,1,4a,7-tetramethyl (4.1%), α-pinene (3.1%), sclarene (2.9%), 9-*cis*-retinal (2.8%), octyl formate (1.4%), verticiol (1.2%) decyl acetate (1.2%), *n*-octanol (1.1%). The chemical profile of the oil is considered as a chemotaxonomical marker that confirmed the botanical and geographical source of the resin. Biologically, the oil exhibited a strong immunostimulant activity (90% lymphocyte transformation) when assessed by a lymphocyte proliferation assay.

Key words: Frankincense Essential Oil, Immunomodulatory Activity