

Chemical Composition and Fungitoxic Activity of Essential Oil of *Thuja orientalis* L. Grown in the North-Western Himalaya

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The essential oil from fresh leaves of *Thuja orientalis* L. grown in the north-western Himalaya was isolated by means of hydrodistillation and analyzed by GC and GC/MS. Twenty-two compounds representing 94.0% of the total oil were identified. The leaf oil contained α -pinene (29.2%), Δ -3-carene (20.1%), α -cedrol (9.8%), caryophyllene (7.5%), α -humulene (5.6%), limonene (5.4%), α -terpinolene (3.8%) and α -terpinyl acetate (3.5%) as major constituents. The essential oil showed antifungal activity against *Alternaria alternata* in a direct bioautography assay. Two main bioactive compounds named as b_1 ($R_f = 0.54$) and b_2 ($R_f = 0.80$) were observed and tested for antifungal activity; they produced an inhibition zone of 5 and 10 mm in diameter, respectively. The components b_1 and b_2 were further purified by preparative thin layer chromatography and their antifungal efficacy was re-tested. The minimum inhibitory amount (MIA) of b_1 and b_2 against *A. alternata* was determined as 30.5 and 4.5 μ g, respectively, using a bioautography assay. The bioactive constituent corresponding to b_1 was determined as α -cedrol by using GC/MS analysis. The potential of essential oils as a source of natural biocides is discussed.

Key words: *Thuja orientalis* L., α -Cedrol, Antifungal Activity