A STUDY OF THE ESSENTIAL OILS OF CLOVE BUD, STEM AND LEAF (CARYOPHYLLUS AROMATICUS) BY COMBINED GC-MS ANALYSIS

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The essential oils from the aerial parts of the clove plant namely, the bud, stem (flowering stalks) and leaf were obtained by stem distillation in the laboratory. They were analysed by combined capillary GC and mass spectroscopy. These oils from Sri Lanka have been analysed by GC only on packed columns previously. Literature [1] mentions the presence of large quantities of eugenol in substantial (10%) amounts. The present analysis found 79.0%, 84.1% and 88.1% eugenol and 10.5%, 1.4% and 1.7% eugenyl acetate in oils of clove bud, stem and leaf. An array of sesquiterpene hydrocarbons were detected in the bud while stem and leaf oil contained only some of these compounds. The separation of those compounds was only possible using capillary GC and they were identified by using the mass library search facility. For example α-ylangene, β-caryophyllene and α-humulene were present in all three oils. Cedrene, Cadinene, Cubenene and farnesene were present in bud and leaf oils only. Except for α-caryophyllene in bud and leaf (7.5% and 6.8%) and camphor in stem oil (9.2%) all other terpenoid substances were present in small to trace amounts. Some noteworthy feature among those oils are 1. the low levels of methyl eugenol and methyl isoeugenol even though the main constituant is eugenol. 2. the presence of cinnamaldehyde inMyrtaceae species and 3. the presence of camphor in the stem oil in substantial amounts while none were detected in the bud or leaf oil. The results were compared with commercially produced samples that were available.

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Reference:

1. Guenther, E.(1949) in The Essential oils vol. IV, New York, D. Van Nostrand Co.