ABSTRACT

The present thesis has been divided into six chapters.

Chapter I consists of the introduction and traces a brief history and development of the essential and fixed oils in general, bringing out the Indian heritage and its present position. The occurrence, physiological properties, chemistry and biosynthesis of these plant products in brief, and the object of the present investigations along with a short resume of the work done has also been presented.

Chapter II deals with the various methods and techniques in vogue for the separation and identification of the constituents of the essential oils. The role of the modern physical methods like the ultra violet, infra-red, and nuclear magnetic resonance spectroscopy in the determination of the structure of plant products has been brought out, whilst the utility of the age old chemical methods has also not been lost sight of.

Chapter III describes the studies on the hitherto unworked essential oil of Eugenia heyneana. The oil obtained in an yield of 0.25% from the leaves has been found to contain \( \alpha \)-pinene (27.1%), limonene (20.3%), cineol (11.5%), d-cadinene (10.2%) as the major constituents along with linalool (8.0%),
geranyl acetate (5.6%), geraniol (4.9%), citral (3.0%) and perillaldehyde (2.5%) as the others present. A new azulene has also been isolated from the oil as also a small amount of an unidentified solid.

Chapter IV gives an account of the chemical examination of the essential oil derived from the leaves of *Murraya paniculata* in which the presence of 1-cadinene (35.2%) and methyl anthranilate (1.5%) as reported by earlier workers, has been confirmed. In addition, the oil has been found to contain bisabolene (18%), β-caryophyllene (14%), geraniol (9.1%), Δ3-carene (5%), eugenol (5%), citronellol (4.5%), methyl salicylate (3.5%) and S-guaiazulene (1.2%). A new bicyclic sesquiterpenic alcohol C15H26O, has also been isolated from the oil and preliminary studies reported on its characteristics:

Chapter V lays out the chemical examination of the essential oil derived from *Eupatorium triplinerve*, which has been found to have the composition:

Thymohydroquinone dimethyl ether (49.3%), α-terpineol (5.2%), bornyl acetate (4.6%), borneol (8%), 1-linalool (6.5%), 1-α-phellandrene (8.9%), sabinene (5.3%), coumarin (2.5%), and dipentene (7.3%).
Chapter VI has been devoted to the studies on the fixed oil from the seeds of *Luffa acutangula*, which has been established to be a glyceride of myristic, palmitic, stearic, palmitoleic, oleic and linolenic acids. The unsaponifiable matter (0.79%) of the oil has been found to contain \( \beta \)-sitosterol.