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CHEMICAL STUDIES  
ON SOME  
ESSENTIAL OILS OF SRI LANKA  
THE STUDIES ON CITRONELLA OIL AND  
CINNAMON OILS

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by

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ABSTRACT

This dissertation discusses the original work carried out during the studies on some essential oils of Sri Lanka. It consists of nine chapters whose sections and sub sections are numbered according to the decimal system. An appendix in four parts is attached at the end of chapter 9 where the structures of most of the chemical compounds mentioned in text are illustrated in Part I, the Infra Red absorption value of the compounds which were subjected to the IR analysis are given in Part II, a glossary of terms and abbreviations used throughout text is in Part III and the list of suppliers and other sources of the reference compounds used in the investigations is given in Part IV. The bibliography is listed according to the sequence in which the references are quoted in the text.

Chapter 1, is the general introduction to thesis in which a brief historical survey of citronella and cinnamon in Sri Lanka is also recorded. Chapter 2, deals with Gas Liquid Chromatography, the main analytical technique used during the studies discussed in thesis. An attempt has been made to describe the important features of the technique in brief including the theoretical aspects of gas chromatography. In chapter 3 some other analytical methods used in the study of essential oils are discussed, while chapter 4 describes some methods of isolating and extracting essential oils from plant raw materials. The last two sections of the chapter describe the distillation methods

for extracting cinnamon bark and cinnamon leaf oil on production level in Sri Lanka. In chapter 5 a brief discussion of the biosynthesis of the different volatile constituents<sup>s</sup> of essential oils is given and the three sections deal with monoterpene, sesquiterpene and phenylpropanoid components separately. Chapter 6 discusses one of the main subjects of the studies on Essential Oils of Sri Lanka : Citronella oil. This oil has the largest export market among a number of essential oils and spice oils that are produced in Sri Lanka. It was felt that a detailed study of citronella oil (Ceylon) would be of paramount importance to the essential oil industry in the country and this oil being unique to Sri Lanka offered a good opportunity to apply modern analytical methods to the study of an important and interesting natural product. In chapter 7 the second subject of the studies, the oils of cinnamon are discussed. This chapter deals with the two essential oils, cinnamon bark and cinnamon leaf oil only. Cinnamon bark is the most important spice of Sri Lanka and more than half the world's cinnamon is produced here. Cinnamon bark oil is a valuable flavour and perfumery material which fetches very high prices in the world markets. Cinnamon leaf oil could be considered a byproduct of the cinnamon spice industry, because this oil is produced from cinnamon leaves which are discarded during the harvest of stems for the production of cinnamon quills. In Chapter 8 is discussed the locations and investigation of a rare variety of cinnamon which had been known in the past and used for medicinal purposes. Due to heavy exploitation or some other unknown reason this variety had disappeared from areas

where other cinnamon grew abundantly. At present it is located in remote jungles and in isolated spots where single trees are found growing. The investigations were limited to the bark oil which had a characteristic but distinctly different odour from the oil of normal cinnamon bark. In conclusion, chapter 9 discusses some of the advantages and important results which were obtained during these studies and points out some of the shortcomings which resulted from the lack of a number of basic analytical instruments used in more advanced laboratories for investigating problems, similar to ones discussed here.

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