

PREFACE

The research work embodied in this thesis was carried out in the Chemical Laboratories of Acharya Nagarjuna University under the guidance of Prof Bhattiprolu Kesava Rao. The extent and source of information derived from the existing literature have been indicated in the body of the thesis at the appropriate places.

The author expresses her deep sense of gratitude and indebtedness to Prof. B. Kesava Rao Chairman-BOS, Department of Chemistry, ANU for his valuable guidance and constant encouragement throughout the progress of the work. The current thesis is entitled as “**Isolation of Phyto Chemical Constituents from Bhallataka and Synthesis of Bhallataka Biodiesel, Biolubricants, Novel Applications and their Biological activities**” and it consists of Five Chapters.

Chapter -I: It mainly deals with the Importance of Herbal plants, their Biological Activities, Chemical constituents and their Pharmacological activities of *Semecarpus anacardium L.f*, (Sa). In our survey, we found that, the Anacardiaceae family has 83 genera and 860 species existing as trees, shrubs and vines. We have selected *Semecarpus anacardium L.f*, for its high medicinal value in Ayurveda and siddha systems.

Chapter -II: This chapter deals with the Isolation and structural determination of **Six New** Triacylglycerides; their fatty acid composition. *Semecarpus anacardium L.f* Nuts, Leaves, Flowers, Root bark and Stem bark were collected from Nandgaon and all plant materials Specimens were identified with accession number **1874** by Prof. Vatsavaya S. Raju .Department of Botany, Kakatiya University, Warangal, AP.

Semecarpus anacardium L.f Nuts were extracted with petroleum ether and Acetone in cold and hot condition, the solvent from this extract was removed under reduced pressure and the substances obtained were subjected for column chromatography on silica gel and the column were eluted with increasing polarity of solvents individually. **Six New** Non-volatile Triacylglycerides were obtained with different fatty acid compositions and were named as Bhallataka oil (1-6).

Chapter-III: In this chapter I have discussed the Synthesis of Bhallataka Biodiesel from Bhallataka Oil-2 (**Tulja triacylglyceride**) by trans-esterification and Bio lubricant from Bhallataka Oil-5 (**Shiva triacylglyceride**) by the Oxidation processes which are found to be the industrial applications of Bhallataka 2 and 5 Triacylglycerides

Chapter-IV : This chapter deals mainly with the Isolation of 20 fatty acids from Sa whole plant; their Docking; comparative studies and the Detection of nine Multi metals from *Semecarpus anacardium L.f* Flowers, Leaves, Nuts, Stem bark, Root bark of various extracts and Ash contents. The Docking studies and the presence of multi metals in ash content found to be the **first report** from this plant.

Chapter-V: In This chapter, I have mainly discussed with the Isolation of **New compound 'Bhavanol'** and converted them to their thiol derivatives with Mercapto ethanol, 2-mercapto ethylamine hydrochloride and Thioglycolic acid and all the derivatives are unique and found to be novel in their properties and acts as thermo setting resins for the future polymer Industries and also discussed about the Isolation of Biflavonoids from *Semecarpus anacardium* Nuts and Root bark. Docking studies and the Biological activities of these Biflavonoids are discussed, which are the **novel aspects** from these compounds.

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