

S.a.c.4. PUSHPAKUMARI, K.N.—Studies on lemongrass oil—1988—Dr. Paul A. Vatakencherry.

Lemongrass oil contains generally about 75% of citral which is infact a mixture of geranial (citral a) and neral (citral b) roughly in the ratio of 5:3. At present citral is estimated using sodium bisulphite adducting method. Due to the presence of 2 ethylenic linkages and an aldehyde group, the bisulphite adducting is found to be complicated. Moreover other aldehydes and methyl ketones present in lemongrass oil will also get adducted, there by increasing the percentage of citral estimated. In the present work a new and efficient method has been developed for the estimation of citral using column chromatographic technique. This method has been extended for the isolation of citral in pure form, from lemongrass oil, in quantitative yields. Citral has also been separated into three fractions, pure neral, mixture of neral and geranial and pure geranial by column chromatography which was thought to be difficult. Total analysis of lemongrass oil by separation of the individual components has also been achieved using chromatographic technique.

Conversion of citral, the main component of lemongrass oil, to other industrially important components are investigated. The utility of basic alumina as the condensation catalyst for the condensation of citral with acetone for the preparation of pseudoionone, a key intermediate in the synthesis of Vitamin A, is demonstrated. Cyclisation of pseudoionone to ionones with acidic alumina soaked with para-toluene sulfonic acid has also been achieved.

β -damascone, a valuable flavour and perfume material has been synthesized starting from citral through β -ionone.

Citral has been condensed with the terminal allylic functionalised methyl heptenone to get the C-18 ketone, which is a key synthon for the synthesis of phytol, isophytol, Vitamin E and Vitamin K₁.