



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study	:	Ph.D.
Thesis Title	:	Essential oil extraction from Java Citronella (<i>Cymbopogon winterianus</i> Jowitt) and valorisation of the spent biomass to value added chemicals
Name of Thesis Supervisor(s)	:	Professor Vaibhav V. Goud
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SHORT ABSTRACT

The present study mainly emphasises on investigating a suitable technique for the extraction of essential oil from Java citronella (*Cymbopogon winterianus* Jowitt). Distillation methods which are relatively simple, cheap, environment friendly, produce good quality oil are preferred for essential oil extraction from grasses. Thus, in this thesis, hydro distillation technique was used to estimate the quantity of essential oil present in different parts of Java citronella plant. Hydro distillation process was compared with Steam distillation (SD), Ultrasonic assisted HD (UA-HD) and Ultrasonic assisted SD (UA-SD) on the basis of essential oil yield and its composition. The extracted citronella oil was tested with six bacteria strains namely *Bacillus subtilis*, *Staphylococcus epidermidis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumonia* and *Escherichia coli*, and was found to be effective against all the tested strains, which revealed that citronella oil with selection of specific concentration could act as an anti-bacterial supplement for the treatment of various bacterial infections. After essential oil extraction, the spent biomass (biomass after essential oil extraction) was utilised for the production of value-added chemicals viz. total reducing sugars (TRS) and levulinic acid. Further the results obtained from spent biomass of citronella was compared with bagasse, which is a standard lignocellulosic biomass mostly used for bioenergy and biochemical production.