



*International Conference on*

# INNOVATIVE AND EMERGING TRENDS IN BOTANY - 2019



# (ICIETB-2019)

6<sup>th</sup> - 7<sup>th</sup> November 2019



Organised by

## DEPARTMENT OF BOTANY

*(DST - PURSE Sponsored Department)*

# ALAGAPPA UNIVERSITY

(A State University Established in 1985)

Karaikudi - 630 003, Tamil Nadu, India.

## Compositional variability of essential oils in twenty two cardamom [*Elettaria cardamomum* (L.) maton] accessions by GC-MS analysis

Ashokkumar K<sup>\*1</sup>, Murugan M<sup>1</sup>, Dhanya M.K<sup>1</sup>, Vellaikumar S<sup>2</sup>, Karthikeyan A<sup>3</sup>,  
Nimisha M<sup>1</sup>, Aiswarya S<sup>1</sup> and Amalu S<sup>1</sup>

<sup>1</sup>Cardamom Research Station, Kerala Agricultural University, Pampadumpara, Idukki, Kerala, India

<sup>2</sup>Agricultural College and Research Institute,

Tamil Nadu Agricultural University, Madurai, Tamil Nadu, India

<sup>3</sup>Faculty of Biotechnology, Subtropical Horticulture Research Institute, Jeju National University,

Jejudachak-ro 102, Jejusi, Jeju-63243, Republic of Korea

\*Corresponding author e-mail: biotech.ashok@gmail.com

*Elettaria cardamomum* (L.) Maton popularly known as Indian cardamom or small cardamom is mostly cultivated in the Western Ghats at medium to higher altitudes ranging from 900 to 1400 msl. The essential oil (EO) of cardamom capsules is an expensive ingredient in food preparation, beverages, perfumery and traditional medicines. Twenty two promising accessions of cardamom grown in the stations experimental plots were selected and matured capsules were harvested during March 2019 and cured so as to evaluate EO composition. The essential oils of cured capsules were extracted by hydro-distillation method and it was ranged from 4.5 % - 9.5% which is responsible for its characteristic aroma. Twenty four compounds were identified by GC- MS analyzer, which constitute 97.14 – 100% of total essential oil. The main fractions were found to be monoterpenes (26.6 – 64.08%) and esters (34.79 - 54.34%) followed by sesquiterpenes (0.20 – 8.96%). Among monoterpenoids, the predominant constituents were 1,8-cineole (15.24 - 49.41%) followed by  $\alpha$ -terpineol (0.83 – 13.17%),  $\beta$ -linalool (0.44 – 10.95%) and sabinene (1.91 – 4.94%). The major ester constituent was  $\alpha$ -terpinyl acetate (29.93 – 61.28%), while substantial quantity of geranyl acetate varied from 0.11 - 2.25%. The essential oil possessed significant level of three sesquiterpenes. The compositional data were subjected to rescaled distance cluster combine analysis by SPSS statistical software and based on that twenty two cardamom accessions analysed were grouped into two major clusters. The major constituents of EO are 1, 8-cineole,  $\alpha$ -terpinyl acetate,  $\alpha$ -terpineol, sabinene, and  $\beta$ -linalool that can be used in the food, aroma and pharmaceutical applications.

**Keywords:** Cardamom, essential oil, 1, 8-cineole,  $\alpha$ - terpinyl acetate, GC-MS analysis