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BIOACTIVE COMPOUNDS IN ESSENTIAL OIL FROM TORCH GINGER (ETLINGERA ELATIOR) FLOWER EXTRACTED USING SUBCRITICAL CARBON DIOXIDE

Meor Hussin A S, Sukor R, Zainal Abedin N H, Saari N and Anzian A

University Putra Malaysia, Malaysia

Introduction: The presence of biologically active volatile compounds in Torch ginger (*Etingera elatior*) highlighted as a new oriental in flavour and fragrances. Research on bioactive and volatile compounds of torch ginger offers promising development of natural resources into nutraceuticals, cosmeceuticals and biopharmaceuticals. The aim of the study is to characterize the chemical constituents and bioactive compound activities of essential oil from torch ginger extracted using the subcritical carbon dioxide.

Materials & Methods: Essential oil from sliced oven dried tight bud torch ginger flowers were extracted using subcritical carbon dioxide extraction. The bioactive compounds in the essential oil were identified using Gas Chromatography-Mass spectrometry (GCMS). The bioactive compound activities of the essential oils were analysed by total phenolic content (TPC) and total flavonoid content (TFC), antioxidant analysis (DPPH assay, FRAP assay and ABTS scavenging activity) and antibacterial analysis (disc diffusion method and minimal inhibitory concentration (MIC)).

Results: The yield of essential oil obtained from subcritical carbon dioxide extraction was 5.5% and the most abundant compounds in torch ginger included α -pinene, caryophyllene, 1-dodecanol, dodecanoic and dodecanal. The bioactive compound activities of essential oil from torch ginger flower were as such: TPC (1590.23 \pm 3.74 mg GAE/100g), TFC (1686.19 \pm 17.34 mg QE/100g), DPPH assay (90.04 \pm 0.25%), FRAP assay (8876.46 \pm 36.35) and ABTS scavenging activity (81.77 \pm 2.10%). The inhibition zone exhibited by torch ginger flower's essential oil shows against several Gram positive bacteria such as *Bacillus cereus* (40.52 \pm 1.28 mm), *Listeria monocytogenes* (20.51 \pm 1.02 mm) and *Staphylococcus aureus* (9.14 \pm 0.51 mm) and against one Gram negative bacteria *Klebsiella pneumoniae* (30.44 \pm 0.90 mm) tested in the study.

Conclusion: These findings clearly indicated that the extracts and essential oil derived from torch ginger flower could be potentially used as a new source of natural antioxidant and antibacterial in the food and pharmaceutical products.

Biography

Meor Hussin A S has completed her PhD from International Islamic University, Malaysia and did her Postdoctoral studies (visiting scientist) from Institute of Food Research, UK for 2 years. She is Head of the Department of Food Science for the Faculty of Food Science and Technology, University Putra Malaysia. She has published more than 40 papers in reputed journals.

shobirin@upm.edu.my