

## Recovery of Essential Oil from Zingiber Officinale Var. Bentong Using Ultrasound Assisted-Supercritical Carbon Dioxide Extraction

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**Abstract :** Zingiber officinale var. Bentong has been identified as the source of high added value compound specifically gingerol-related compounds. The extraction of the high-value compound using conventional method resulted in low yield and time consumption. Hence, the motivation for this work is to investigate the effect of the extraction technique on the essential oil from Zingiber officinale var. Bentong rhizome for commercialization purpose in many industries namely, functional food, pharmaceutical, and cosmeceutical. The investigation begins with a pre-treatment using ultrasound assisted in order to enhance the recovery of essential oil. It was conducted at a fixed frequency (20 kHz) of ultrasound with various time (10, 20, 40 min). The extraction using supercritical carbon dioxide (scCO<sub>2</sub>) were carried out afterward at a specific condition of temperature (50 °C) and pressure (30 MPa). scCO<sub>2</sub> extraction seems to be a promising sustainable green method for the extraction of essential oil due to the benefits that CO<sub>2</sub> possesses. The expected results demonstrated the ultrasound-assisted-scCO<sub>2</sub> produces a higher yield of essential oil compared to solely scCO<sub>2</sub> extraction. This research will provide important features for its application in food supplements or phytochemical preparations.

**Keywords :** essential oil, scCO<sub>2</sub>, ultrasound assisted, Zingiber officinale Var. Bentong

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