

**CHEMICAL COMPOSITION OF VOLATILE OIL OF YOUNG AND  
OLD RHIZOME OF *ALPINIA GALANGA* PLANT**

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## ABSTRACT

### CHEMICAL COMPOSITION OF VOLATILE OIL OF YOUNG AND OLD RHIZOME OF *ALPINIA GALANGA* PLANT

Volatile oil of *Alpinia galanga* species was extracted from young and old rhizome using ethyl acetate and hexane solution as extraction solvent. *Alpinia galanga* is one of the Zingiberaceae families in which it is very useful in treating disease and antimicrobial activities. *Alpinia galanga* is widely used in cooking, foods flavouring and perfumes production as it has nice and fragrance smell. Volatile oil was extracted from the young and old rhizome of *Alpinia galanga* by using hydro-distillation technique. The volatile oil obtained was extracted by using two different solvent solutions for each rhizome which was ethyl acetate and hexane solution. The volatile oil was then being analysed using Gas Chromatography Mass Spectroscopy (GC-MS) instrument. (S)-1-(4-acetoxyphenyl) propyl acetate compound was the main chemical constituent in the young rhizome volatile oil by using both types of solvent but different in percentage of similarity index. In ethyl acetate extraction solvent, this compound was detected in 95.3% of similarity index while in hexane extraction solvent, the compound was detected to be 93.9% of similarity index. In contrast, the main chemical compositions in the volatile oil of old rhizome of *Alpinia galanga* was (1S,4R,5R)-1,3,3-trimethyl-2-oxabicyclo[2.2.2]octan-5-yl acetate with 78.7% of similarity index for hexane solvent extraction and 95.9% for ethyl acetate solvent extraction. The data showed that ethyl acetate solvent had high efficiency in oil extraction compared to hexane solvent. Meanwhile, old rhizome yielded high amount of volatile oil compared to young rhizome of *Alpinia galanga*. Five new chemical constituents found in the volatile from both type of rhizomes were isopentyl acetate, 1,3,3-Trimethyl-2-oxabicyclo[2.2.2]oct-6-yl acetate, (S)-1-(4-Acetoxyphenyl)propyl acetate, (1S,4R,5R)-1,3,3-Trimethyl-2-oxabicyclo[2.2.2]octan-5-ol and (2S,2'S)-2,2'-Bis[1,4,7,10,13-pentaoxacyclopentadecane] since these compounds were not reported by any previous study.

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