

**INFLUENCE OF DIFFERENT METHODS ON THE EXTRACTION OF
THE ZERUMBONE FROM *ZINGIBER ZERUMBET***

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ABSTRACT

Zingiber zerumbet or known as lempoyang in Malaysia is one of the Zingiberaceae family commonly used as an ingredients in Indo-Malaysian traditional medicines, health supplements and tonics. Oil of *Z. zerumbet* was obtained by hydrodistillation and Supercritical Fluid extraction (SFE). The oil were analyzed by a combination of capillary GC and GC/MS. The chemical components were determined by comparing their mass spectral with those from the mass spectral database library and conformations by kovats index calculation. Twenty one chemical components were identified from the rhizomes of *Z. zerumbet* obtained by hydrodistillation and much lesser chemical components ranging from 13-16 were discovered by SFE method. The results showed that the extraction of chemical compounds by SFE can be specified by controlling numerous parameter variables as compared to hydrodistillation. Based on hydrodistillation, the essential oil yield was 1.67% (v/w). For SFE, the extract oil yield varied from 0.20-1.80% (w/w) under different parameter conditions. The most major component of essential oil obtained by hydrodistillation was zerumbone comprising 37.60% of the total oil. Other major chemical components in hydrodistillation method were camphene (8.70%), α -humulene (4.33%), camphor (2.72%), humulene epoxide II (2.67%). Whereas, the most major component of extract oil obtained by SFE was also zerumbone comprising 60.30% at optimum condition of pressure 100 bar with temperature 50°C. Other major chemical components in SFE method were α -humulene (11.28%) and humulene epoxide II (2.29%) both appeared at optimum condition of pressure 100 bar with temperature 40°C. The result revealed that, zerumbone is the most major compound found in the oil of *Z. zerumbet* rhizome. Compound of interest can be extracted and make undesirables compound almost negligible by considering various parameter condition when SFE method is used. SFE offer several advantages over hydrodistillation for future application.