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**Research on Lemongrass Oil Extraction Technology: Hydrodistillation, Steam
istillation, and Microwave-Assisted Hydrodistillation**

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EXTENDED ABSTRACT

Nowaday, people's health issues are of particular interest and motivate them to focus on natural products from countless herbs and plants. Essential oil is one of the most remarkable natural substances. There are hundreds of essential oils and they contain a lot of aromatic compounds [1]. These aromatic compounds are widely used in many products in food, pharmaceuticals and cosmetics. Inside, Lemongrass (*Cymbopogon citratus stapf*) oil with mainly citral (neral and geranial) component has been considered an important component in the antibacterial, antifungal, antioxidant, antiseptic activities [2].

The traditional method for producing lemongrass is hydro-distillation (HD) and steam distillation (SD) (Fig. 1a, 1b). Two method produces volatile aromatic compounds of lemongrass, with mainly monoterpenes, sesquiterpenes and oxygenated derivatives containing compounds such as alcohols, aldehydes, ketones, acids, phenols, lactones, ethers and esters. However, two method has shown some disadvantages: When we heat it will lead to volatile components can be damaged or decomposed, which will reduce the efficiency of the essential oil, longer time extraction, degradation of some components through thermal and hydrolytic effects and the questionable quality of the final product [3].

To surmount this disadvantages, the extraction methods by microwave oven was research [4]. Such as microwave- assisted hydro-distillation (MAHD) and solvent-free microwave extraction (SFME) have proven to be fast and efficient methods for extracting essential oils from medicinal plant [5]. In this research, our team will investigate the parameters that affect the extraction of lemongrass oil process by MAHD method. There are four parameters that affect this process: raw material size, raw material to water ratio, extraction time and microwave power. The results show that the optimum condition for determining the lemongrass essential oil content is 20mm in the 90-minute extraction time with a microwave power of 450W at raw material to water ratio of 1:3. When compared to the HD and SD method, we see that the yield lemongrass oil of MAHD method is 0.35% on 90 min, HD and SD method is 0.15% on 360 min, 0.2% on 360 min, respectively. Therefore, MAHD method is considered to be highly efficient and shorten the

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