

# Application of Microwave Hydrodiffusion and Gravity (MHG) In Producing Essential Oil From Onion (*Allium cepa* L.) as Green Technology Alternative <sup>†</sup>

Haqqyana Haqqyana <sup>1</sup>, Rully P. Audhina <sup>1</sup>, Muhammad H. C. Farhan <sup>1</sup>, Mahfud Mahfud <sup>1,\*</sup>

<sup>1</sup> Department of Chemical Engineering, Faculty of Industrial Technology and Design Systems, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia; haqqyana.19022@mhs.its.ac.id (H.H.), mahfud@chem-eng.its.ac.id (M.M.);

\* Correspondence: mahfud@chem-eng.its.ac.id (M.M.);

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**Abstract:** *Allium cepa* L., commonly known as onion, possesses many biological activities, including antioxidant, anti-inflammatory, and antibacterial. The onion extracts have also been reported as an effective substance in lowering blood sugar levels. In recent years, a greener approach using microwave technology to extract essential oils has been developed, eliminating the use of organic solvents while also promoting a higher extraction rate. The objective of this study was to determine the effect of the operating parameters: material size (1; 2 and 3 cm), microwave power (300; 450 and 600 W), and extraction time (15; 30 and 45 minutes), on onion oil extraction using the microwave hydro diffusion and gravity (MHG) method. In this study, the chemical compounds of the onion oil extracts were also identified. GC-MS analysis showed that the furan compound group was the dominant compound found in the essential onion oil, namely Ethyl 2- (5-methyl-5-vinyltetrahydrofuran-2-yl) propan-2-yl carbonate by 32,785%. Furthermore, the MHG method could provide an alternative to the conventional extraction method with a fast, robust, and environmentally friendly approach for extracting essential oils from onions (*Allium cepa* L.).

**Keywords:** *Allium cepa* L.; essential oil; microwave hydro diffusion and gravity; onion.

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## Conflicts of Interest

The authors declare no conflict of interest.