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Toxicity Test of Nano-Encapsulated Eugenol Containing Biopesticide by Brine Shrimp Lethality Test

Concern against short-term and long-term adverse health effect of synthetic pesticide, both to the human and environment has encouraged the development of bio-pesticide. Eugenol as major component of Clove, *Syzygium aromaticum*, has been proofed as potential biopesticide in various study (Bakkali et al. 2008; Burt 2004; Deans & Ritchie 1987). However, evaporation and photosensitive properties of eugenol limit its benefit. Thus nano-encapsulation was implemented to overcome those constraints (Cortés-Rojas et al. 2014; Donsi et al. 2011). On the other hand, the effect of nano-encapsulation into Biopesticide toxicity needs to be investigated. This study aimed to examine the toxicity of nano-encapsulated Eugenol Containing Biopesticide (ECB) against *Artemia salina* sp by Brine Shrimp Lethality Test (BSLT). It was found that nano-encapsulation treatment has statistically increased the toxicity of ECB with a confidence level of 95%. LC50 of nano-ECB was 0.264 µg/L while LC50 of ECB-suspension was 4.445 µg/L. The amplification of ECB toxicity might be due to stability improvement as well as penetration enhancement of NPS to the exposed organism, known as "Trojan Horse Effect" (Cortés-Rojas et al. 2014; Donsi et al. 2011; Turek & Stintzing 2013; Kumari et al. 2014; Garg & Singh 2011).

Key words: eugenol, nano encapsulation, biopesticide, BSLT.

Author: TEJAMAYA, Mila (Department of Occupational Health and Safety, Faculty of Public Health, Universitas Indonesia, Depok Indonesia, 16424)

Presenter: TEJAMAYA, Mila (Department of Occupational Health and Safety, Faculty of Public Health, Universitas Indonesia, Depok Indonesia, 16424)

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