

**EFFECTS OF *Cymbopogon Citratus* (LEMONGRASS) ESSENTIAL OIL
IN CORNSTARCH BIODEGRADABLE FILM**

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ABSTRACT

EFFECTS OF *Cymbopogon citratus* (LEMONGRASS) ESSENTIAL OIL IN CORNSTARCH BIODEGRADABLE FILM

Petroleum-based plastic has been abundantly used in various packaging applications. Recently, the drastic increase of COVID-19 cases worldwide witnessed an overwhelming demand for plastic products especially goods that related to daily usage and medical applications such as plastics film. The continuous demand for plastic packaging products resulted in the scrapping and accumulation of thousands of tonnes of plastic films annually, all of which is alarmingly jeopardizing our environment. This is due to the limitation of petroleum-based plastics that can be rapid-degraded or deformed by themselves within the environment. Hence, the use biodegradable film, which can reduce waste dumping problems, is being studied to create a potential substitution for conventional films. Therefore, the use of cornstarch as a biodegradable film and lemongrass essential oil as an additive is suitable as both can be produced by using natural and renewable sources. Antibacterial, antifungal, antiviral, antiparasitic, and antidermatophytic activities are also found in plant oils. Taking this into account, the purpose of the study is to evaluate the characterization of lemongrass essential oil (LEO) using Fourier Transform Infrared (FTIR) spectroscopy. Next, the biodegradable film was also prepared from cornstarch and the addition of different concentration of lemongrass essential oil with presence of glycerol. Lastly, the effect of biodegradable film with the addition of lemongrass essential oil as additive were study based on the physical and mechanical properties. It was found that as the concentration of lemongrass essential oil increased in cornstarch film, the elongation at break and the biodegradability test also increased significantly. On the other hand, the increment of LEO caused a decrement in moisture uptake, film solubility, tensile strength and Young's modulus properties due to presence of essential oil contributed to hydrophobicity of film and it would loosen the starch -polymer network, thus became more flexible film.