

**BIODIESEL ADDITIVE PERFORMANCE FROM TERT-BUTYLHYDROQUINONE AND SURFACTANT GLYCEROL MONOSTEARATE**

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### STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

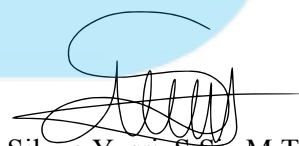
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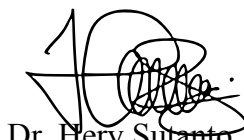


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**ABSTRACT**

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As the world continues to shift to cleaner alternatives to replace the conventional use of fossil fuel, a promising renewable alternative in the transport sector is biodiesel, a type of biofuel, which can be made from a variety mix of biowaste through the process of transesterification. However, the production process faces a few challenges due to unsaturation in ester chains making it oxidatively unstable and therefore addition of phenolic antioxidants and surfactants are often necessary. Previous studies have shown that tertiary butylhydroquinone (TBHQ) and glycerol monostearate (GMS) performs well as additives in biodiesel from used cooking oil by increasing its oxidative stability. However, the full parameter of its performance has yet been tested. This thesis aims to analyze the performance of biodiesel additives TBHQ and GMS in pure biodiesel B100 from CPO according to four parameters; the acid number, iodine value, kinematic viscosity, and the induction period according to the Indonesian SNI standards. Within the span of four weeks results shows that addition of additives TBHQ and GMS was able to significantly improve oxidative stability in terms of acid number, iodine value, and induction period. The addition of TBHQ increased the viscosity however, GMS was able to inhibit the rise. Nevertheless, all the results complied under the SNI standards for biodiesel B100.

*Keywords: Biodiesel additives, Antioxidant TBHQ, Surfactant GMS, Oxidative stability of biodiesel.*



## **DEDICATION**

I dedicate this work to my families and friends who always supports me and for the future of my beloved country: Indonesia



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