

## **Use of enzymes and hydraulic press for the extraction of palm oil with increased oxidative stability**

### **ABSTRACT**

Palm oil is known as one of the important vegetable oils enriched with health beneficial constituents. However, improper extraction methods and storage conditions may lead to rancidity in vegetable oils and loss its oxidative stability. An aqueous enzymatic process was reported in yielding vegetable oil with increased antioxidant capacities. Meanwhile, previous studies extracted vegetable oil with lower oxidation products using hydraulic press. To date, no study explored the production of palm oil with increased oxidative stability against quality deterioration. Hence, this study is set out to exploit the use of enzymes and hydraulic press for their influence on the antioxidant capacities and oxidative stability of palm oil. The oil palm fruits were pre-treated with cellulase (S), pectinase (P) and tannase (T) at 0.5% enzyme solution (w/v), respectively, at a ratio of enzyme solution to pulp of 1:1 for 30 minutes of incubation time at 50°C. All fruit samples were subjected to oil expression using the hydraulic press. Antioxidant capacities of oil sample SPT were found significantly higher, and these results were supported by its high content of total phenolic content and carotene content. In the oxidative stability assessment, the peroxide value, *p*-anisidine value and total oxidation value increased over the one-month storage period for all oil samples, with oil sample SPT significantly lower than other samples. This study revealed the potential of enzymatic pre-treatment with SPT on oil palm fruits and hydraulic press to obtain palm oils with increased oxidative stability.