

## Evaluation of Effect of Passion Fruit (*Passiflora edulis*) Leaf Extract on Stability of Palm Oil during Heating

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Palm oil is widely used in shops as the frying medium. This study was carried out to evaluate the effect of continuous heating on the quality of the palm oil and the effects of adding passion fruit (*Passiflora edulis*) leaf extract on its stability. Antioxidants were extracted from the leaves using acetone. Negative control (samples without any added antioxidants), positive control (samples added with 200 ppm of Butylated Hydroxytoluene (BHT) and test (samples added with 1000 ppm of extract) samples were prepared. All oil samples were evaluated for their stability during continuous heating by heating the oil at  $170\pm 5$  °C up to 24 h (30 min heating followed by 30 min cooling). The level of oxidation of the samples was determined by evaluation of peroxide value, *p*-anisidine value, TOTOX value, free fatty acid content, total polar compounds and fatty acid composition and conjugated diene (CD) and conjugated triene (CT) values. The data were analysed by performing ANOVA ( $\alpha = 0.05$ ) using SAS. The free fatty acid content of the oil before heating was significantly higher ( $44.76\pm 0.09\%$ ) than the standard value (5%) indicating that the oil has undergone extensive hydrolysis already. All parameters measured were increased in all three samples, however, free fatty acid content, peroxide value, *p*-anisidine value and CD and CT values were significantly less in the test samples than positive control and negative control. The average rate of formation of polar compounds (% increase per heating cycle) was significantly less in the test sample (1.29%) and positive control (1.27%) than negative control (1.68%). These results indicate that passion fruit leaf extract (1000 ppm) can more effectively control thermal oxidation of palm oil than BHT during continuous heating. This study shows that the fresh passion fruit leaf extract could be used as a potential source of antioxidant to improve the oxidative stability of edible oils.

**Keywords:** Antioxidant, Continuous heating, Palm oil, Passion fruit leaf extract, Thermal stability