IDENTIFICATION OF THE EFFECTS OF SPICES ON PALM OLEIN RANCIDITY

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Effect of spices on palm olein rancidity was evaluated. Cinnamon, white pepper, black pepper, chilli and ginger in three different concentrations (0.5%, 1.0% and 1.5%) were evaluated with a control sample which was not mixed with any spice. Palm olein and spices were mixed and kept at 85°C in an oven for 5 min and then stored at 42°C for 2 weeks. Free fatty acid (FFA) values of three different concentrations of spices and palm olein were measured at the initial stage and after two weeks. It was observed that the free fatty acid content of samples were high with the increase of spice concentration. Then the highest concentrations used for each spice were tested for FFA and Peroxide Value (PV) at the initial stage and after two weeks time. Heat treatment at 140 °C for 15 min, antioxidant (tocopherol) treatment and combination of both treatments were carried out for white pepper and chilli following the same procedure. Initially, FFA values and PV of each sample were calculated. The results indicated that the highest concentration (1.5%) of spices contributed to the highest FFA development. Black pepper, white pepper and chilli indicated significant effect ($p<0.05$) on FFA development. Cinnamon, black pepper and white pepper indicated a significant effect ($p<0.05$) on peroxide development. Heat treated and antioxidant treated white pepper had no significant affect ($p>0.05$) on FFA development. Also heat treated white pepper was negatively affected on peroxide development. The results concluded that all spices tested at their highest concentration have contributed for the increase of FFA. Among the spices tested, black pepper and white pepper showed a positive effect on palm olein rancidity where ginger exhibited a negative effect. Except for chilli, the heat treatment was more efficient to retard the rancidity on palm olein caused by white pepper.

Keywords: Palm olein, Rancidity, Spices