

Effect of addition of resistant starch on oxidative stability of fried fish crackers as influenced by storage temperatures and packaging materials

ABSTRACT

The aim of the present work was to investigate the effect of the addition of resistant starch (unmodified potato starch) on physicochemical properties and lipid stability of fried fish crackers packed in two types of packaging. Fish crackers added with one part of resistant starch were prepared, packed into two types of packaging with four different layers of packaging material; (i) polyethylene terephthalate-polyethylene-aluminium-linear low density polyethylene and (ii) oriented polypropylene-polyethylene-metallized polyethylene terephthalate-linear low density polyethylene and stored at 25, 40 and 60°C for 12 weeks. The linear expansion and oil absorption of the fried fish cracker were $58.00 \pm 3.46\%$ and $12.60 \pm 1.34\%$ respectively. Physical analyses showed an increase in moisture contents (from 2.75-3.47% to 4.08-4.54%), water activities (0.297 to 0.436aw) and a* and b* values (5.27 to 9.14% and 21.09 to 25.27%, respectively), while a decrease in L* value (from 63 to 58%), hardness (from 2.110 to 1.117 kg) and crispiness (from 12.46 to 8.18 kg/sec) throughout 12 weeks of storage at all temperatures tested. The lipid yield of the crackers increased during the storage time and the concentrations of conjugated dienes and thiobarbituric acid reactive substances showed a gradual increase and decrease, respectively. These results showed that the fried fish crackers in the storage study had undergone lipid oxidation where physical and chemical deterioration were observed and measured. In conclusion, the addition of one part of resistant starch in crackers has given positive effect on the stability of the resulting fried fish crackers.

Keyword: Conjugated dienes; Fried fish crackers; Lipid oxidation; Physico-chemical analyses; Thiobarbituric acid reactive substances; Unmodified potato starch