

Effect of red palm oil and extra virgin coconut oil on physicochemical and gelation properties of threadfin bream surimi

ABSTRACT

Appropriate addition of vegetable oil can improve the flavour, increase the nutritional composition, and modify the quality of surimi seafood products. In the present work, the effects of different levels (0 to 2%) of red palm oil (RPO) and extra virgin coconut oil (EVCO) on the properties of threadfin bream surimi were studied. Significant changes were observed in the contents of moisture and fat when the oils were incorporated ($p < 0.05$), while no differences in the contents of ash and protein were observed ($p > 0.05$). The incorporation of RPO significantly decreased whiteness as the oil level increased, and ranged from 54.44 to 57.59 from 65.20 in Control ($p < 0.05$). No significant change in whiteness among samples with EVCO was observed ($p > 0.05$), regardless of the levels. The pH and cooking yield of the samples increased, whereas water-holding capacity (WHC) decreased ($p < 0.05$). As the oil levels increased, the gel strength continuously decreased ($p < 0.05$), in which the highest decrease of 41% was observed in sample containing 2% RPO, compared to Control. Based on texture profile analysis (TPA), hardness displayed a significant increase with increasing oil levels, and ranged from 14 to 28 N ($p < 0.05$). Chewiness, springiness, and cohesiveness increased as incorporated oils increased ($p < 0.05$). Microstructure study revealed that the oil droplets were uniformly distributed on the gel surface. Higher storage modulus (G') of the samples was observed when the oils were incorporated, compared to Control. Nevertheless, there was no marked difference in the modulus among samples incorporated with the oils at the same level. The present work demonstrated that RPO and EVCO incorporation directly affected threadfin bream surimi's physicochemical and gelation properties.