

Title            Chemical and sensory quality changes of fish fingers, made from mirror carp (*Cyprinus carpio* L., 1758), during frozen storage (-18 °C)

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### **Abstract**

The effects of frozen storage at -18 °C on the chemical and sensory qualities of fish fingers produced from unwashed and washed mirror carp (*Cyprinus carpio*) mince were investigated. The amounts of moisture, crude protein, lipid, crude ash,  $\Omega$ 3 polyunsaturated fatty acids (PUFA  $\Omega$ 3), and  $\Omega$ 6 polyunsaturated fatty acids (PUFA  $\Omega$ 6) in fish fingers produced from unwashed mince (UWF) were found to be 68.50%, 15.5%, 6.00%, 2.20% 2.31%, and 55.2%, respectively, while they were found to be 70.23%, 10.8%, 2.14%, 1.80%, 2.28%, and 54.6%, respectively, in carp fingers produced from washed mince (WF). The thiobarbituric acid value (TBA, mg malonaldehyde/kg) was found to be significantly higher in mince of WF than in mince of UWF and increased significantly during frozen storage in both the mince of UWF and WF ( $p < 0.05$ ). A significant decrease in pH was obtained throughout the washing treatment ( $p < 0.05$ ). There were no significant differences of pH in either the mince of UWF or WF between the beginning and end of the storage periods ( $p > 0.05$ ), whereas a sharp increase was observed in the fourth month in both groups. The protein solubilities of the mince of both UWF and WF decreased significantly throughout the storage periods ( $p < 0.05$ ). Sensory parameters of colour, odour, flavour, and general acceptability for both groups decreased during the frozen storage period ( $p < 0.05$ ) but were still within acceptable limits. It was also concluded that mirror carp was a good source for fish fingers and that product could be stored for five months in a frozen state without undesirable changes of sensory and chemical qualities.