

INFLUENCE OF FROZEN STORAGE AND WHITENING AGENTS ON THE WHITENESS, PHYSICOCHEMICAL AND GEL PROPERTIES OF SURIMI FROM TUNISIAN SARDINE (*SARDINA PILCHARDUS*)

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In this work, an application for the Tunisian industry to use underexploited fish species was introduced. Therefore, the possibility for producing surimi from small pelagic fish, such as sardine (*Sardina pilchardus*), was studied by leaching the fish flesh-mince, improving the whiteness of surimi by adding whitening agents (calcium carbonate and hydrogen peroxide), stabilizing the product using sugar solutions as cryoprotectant agents, production of the kamaboko gel and determination of the effect of whitening agents and frozen storage on the physicochemical and gel properties of surimi and kamaboko at -18°C in four and two months storage period, respectively. The whiteness of surimi, compared to the control, increased when whitening agents were added, but they have no detrimental effects on gel-forming ability. In surimi frozen at -18°C, there was loss of WHC ($p \leq 0.05$), a slight increase in PV and TBARS. A reduction in band intensities, especially MHC bands, was observed. This result was in consistent with total protein (14,02 to 10,13 g/100g) and MFP (1,15 to 0,67 mg/ml) contents, which indicated the degradation of proteins. Microstructure of surimi and gel shows a fibrous and porous structure. The particles of calcium carbonate were dispersed uniformly into surimi but kamaboko gel showed more compact network. The WHC was lower than surimi and the storage modulus G' increased due to the protein aggregate formed through thermal-gelation which symbolizes the formation of a highly elastic stable protein gel. Finally, the major interaction observed in gel was hydrophobic interaction.

Keywords: Surimi, sardine, whitening agents, gel, frozen storage

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