

Fatty Acid Compositions of Raw Fish White Sardinella (Oom), Fish Paste (Tareeh), and Fish Sauce (Mehiawh): Fermented Fish Products Rich in Polyunsaturated Fatty Acids

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Objective: To evaluate the fatty acid contents of raw white sardinella fish and their two fermented products, fish paste (Tareeh) and fish sauce (Mehiawah).

Design: A Prospective Experimental Basic Science Study.

Setting: University of Bahrain, Bahrain.

Method: Four raw Oom fish, four fish paste, and four fish sauce samples were used from each batch. Raw fish samples were first grinded separately and one gram of each grinded raw fish, Tareeh and Mehiawh were homogenized with 10mL of 10% saline solution and 6mL of the homogenate were used. The homogenates were extracted with a mixture of methanol: chloroform (1:1 v/v) Lipids were extracted from the food samples, and their fatty acids methyl esters (FAMES) were analyzed by gas chromatography.

Result: The concentrations of saturated fatty acids and monounsaturated fatty acids were significantly lower in the fermented samples compared to raw samples, whereas the concentrations of unsaturated fatty acids and polyunsaturated fatty acids were significantly higher. The amount of omega-6, omega-3, eicosapentaenoic acid and docosahexaenoic acid were higher in the fermented samples. The unsaturated fatty acid C20:4 n6 was not present in the raw fish samples but was detected in the fermented samples. The findings of the present study have indicated the presence of some degree of desaturation and elongation activities during the fermentation process.

Conclusion: The findings of the present study have indicated the presence of some degree of desaturation and elongation activities during the fermentation process which might have resulted in the production of fermented fish products with elevated levels of polyunsaturated fatty acids (PUFAs), eicosapentaenoic acid (EPA), and docosahexaenoic acid (DHA).