

Bioprocess Engineering

P-023 - EPA AND DHA STABILITY AFTER PROCESSING IN CANNED TUNA WITH SOYA OR REFINED OILS

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Background

Metabolic disorders associated to nutritional patterns have currently reached a social and economic dimension: from noncommunicable diseases, cardiovascular disorders are the leading cause of death worldwide (17.5 millions deceases in 2012)[1]. Thus, EFSA recommends an intake of 0.25-0.50g EPA+DHA/day to assure the normal cardiac function, 2g for cholesterol reduction and 3g for safe blood pressure values [2]. Among the high EPA+DHA foods and for consumers, canned tuna is an attractive alternative to the perishable fresh fish, due to its long shelf life and sensory attributes. Furthermore, vegetable oils can be used as a preserving ingredient and help to promote sensory quality. However, little is known about the effects of formulation, processing and sterilization on the concentration of EPA and DHA of these high PUFA containing foods.

Method

Samples consisted in canned tuna in brine (TN) or oil (TS: with soya oil or TR: with refined olive oil), prior to (A) and after sterilization (B). Lipids were isolated according to the method described by Matyash et al.[3]. Samples were prepared according to Pimentel et al.[4] for the analysis of the fatty acids composition by GC-FID.

Results & Conclusions

All canned samples have a lipid content ten-fold higher than TN. The EPA+DHA content in TN-A and TN-B was 0.48-0.49 g/100 g product, 0.29-0.33 g/100 g product for TR-A and TR-B while for TS was 0.37 (A) and 0.41 (B). The obtained results showed that EPA+DHA in the canned samples was slightly lower by the presence of oil ($p < 0.05$) and was not altered after thermal processing ($p < 0.05$). Addition of oil slightly decreased the EPA+DHA in canned tuna. Thermal processing to obtain canned tuna with soya or refined olive oil did not affect the EPA+DHA contents.

References & Acknowledgments

- [1] Who, Global Status Report on Noncommunicable Diseases 2014, World Health Organization, 2014.
- [2] NDA EFSA Panel, EFSA J. 12 (2014) 3840.
- [3] V. Matyash, G. Liebisch, et al., J Lipid Res 49 (2008) 1137–1146.
- [4] L.L. Pimentel, A.L. Fontes, et al., MethodsX 2 (2015) 475–484.

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