

The amino acids profiles of commonly consumed Polish seafood

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Introduction: Seafood is considered one of the most important sources of protein in the human diet in many parts of the world. However, the nutritional quality of different seafood species varies considerably. Different seafood species have diverse amino acids composition. This study aimed to evaluate the amino acids profiles of 19 seafood species available on the Polish market.

Materials and methods: Nineteen fresh seafood species were obtained from local suppliers located in Krakow, Poland, during the spring season. After purchase samples were immediately transported in ice to the laboratories and subjected to analysis. Three independent samples were obtained for each seafood species. The amino acid composition was determined by the acid hydrolysis technique followed by the analysis on HPLC according to the method described by Tkaczewska et al. (2020). The cluster analysis technique was carried out to group the species with similar amino acids composition.

Results and discussion: In the current study, all essential amino acids, including arginine, histidine, methionine, lysine, threonine, tryptophan, valine, isoleucine, leucine and phenylalanine were identified. From the generated dendrogram, two clusters were obtained for the amino acids profile. Herring and North African catfish showed association in terms of arginine, threonine, leucine and proline content. There was a strong relationship between Atlantic salmon and Common roach in terms of tyrosine and methionine content. Moreover, regarding histidine, methionine, alanine, threonine, tryptophan, valine, isoleucine, and leucine, an association was found between Common octopus and European squid. Lysine and isoleucine were the most predominated essential amino acids in all studied seafood species, with the highest content found in Crucian carp, gilthead bream and European pilchard (2.1 g lysine/100g of product and 1.7-1.9 g/100g of product).

The lowest lysine content was measured in Common octopus (0.9 g/100g of product). Based on the Recommended Daily Intake (RDI), 2.1 g of lysine has been recommended for 70 kg-human (Tessari et al., 2016), therefore consumption of 98-231 g of the studied seafood species is needed to supply the demand for lysine.

Conclusions: Seafood is one of the major sources of essential amino acids. All essential amino acids in high quantities were identified in 19 seafood species. Among them, lysine and isoleucine were the most predominant essential amino acid. The current findings will help consumers and nutrition specialists to create more detailed diets using seafood in regards to protein quality.

Literature:

Tkaczewska, J., Borawska-Dziadkiewicz, J., Kulawik, P., Duda, I., Morawska, M., & Mickowska, B. (2020). The effects of hydrolysis condition on the antioxidant activity of protein hydrolysate from *Cyprinus carpio* skin gelatin. *LWT*, 117, 108616.

Tessari, P., Lante, A. & Mosca, G. 2016. Essential amino acids: master regulators of nutrition and environmental footprint? *Sci Rep*, 6, 26074.