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NUTRITIONAL BENEFITS AND IMPORTANCE OF BIOACTIVE SUBSTANCES IN EUROPEAN HAKE (*Merluccius merluccius*)

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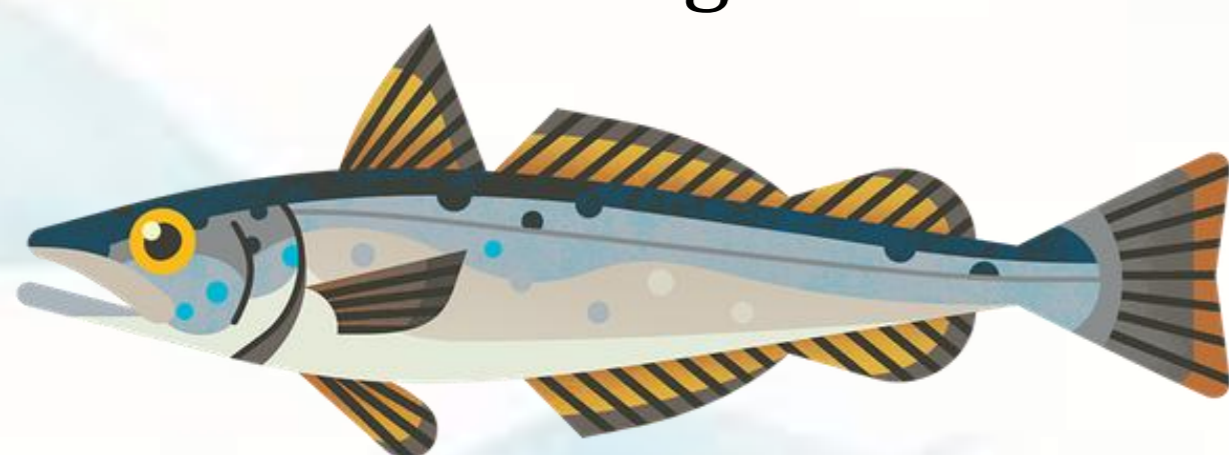
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Abstract:

Part of the human diet includes organisms of marine ecosystems, which are characterized by the presence of different concentrations of mineral substances, lipids, proteins, amino acids etc. The increasing prevalence of processing and thermal treatments of fish affects the appearance of increasing amounts of waste materials, which include different parts of fish such as the head, scales, carcass, where each of these components carries with it a certain amount of bioactive compounds, which can be reused for various nutritional, medical, pharmaceutical and biotechnological properties. In addition to the mentioned organs that can be found in waste, the liver is one of the key components and of interest in many researchers due to its rich content of different fatty acids. One of the crucial acids in the biochemical and metabolic processes of mammals, since they can't be synthesized in their organism are omega - 3 fatty acids, α - linolenic acid (ALA), eicosapentaenoic (EPA) and docosahexaenoic acid (DHA). In a sample, quite dominant fatty acid was *cis* - 13, 16 - docosadienoic acid (13.09%), while there was a lower percent of *cis* - 5, 8, 11, 14, 17 - eicosapentaenoic acid (1.64). Linoleic and α - linolenic amino acids were presented in approximately the same percentage (linoleic acid - 2.84%; α - linolenic acid - 2.1%). The content of fatty acids and other substances depends on many factors: climate, weather, quality of water and pollution; however, the importance of their daily intake is emphasized due to their benefits for human health (improvement of inflammatory response, prevention of cardiovascular diseases). Excessive doses can also have negative effects.

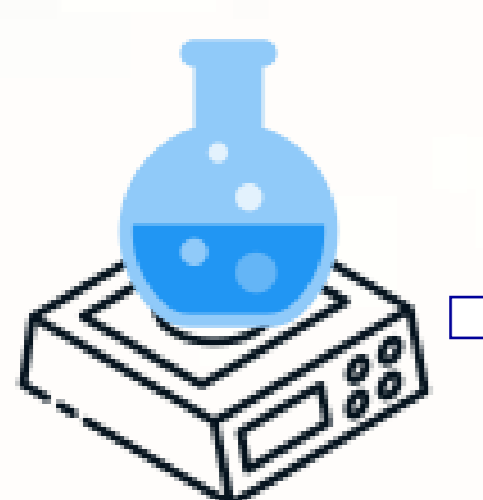
• Introduction

European hake is known for its specific taste and aroma, which is why its price is significantly higher compared to some other fish and seafood. It is nutritionally unique due to the content of fatty acids, such as omega - 3 acids, ALA, EPA, DHA, etc. Conversely, mineral substances (macro- and microelements) are very important components of fish muscles and provide numerous benefits for the normal functioning of metabolic and biochemical processes in the human organism.

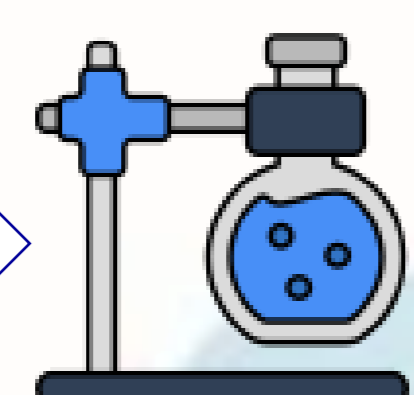


• Material and method

The 37-components FAMES reference standard (CPAchem Ltd, Bulgaria) was used to determine the profile of fatty acids.



Sample weighing for analysis



Sample derivatization



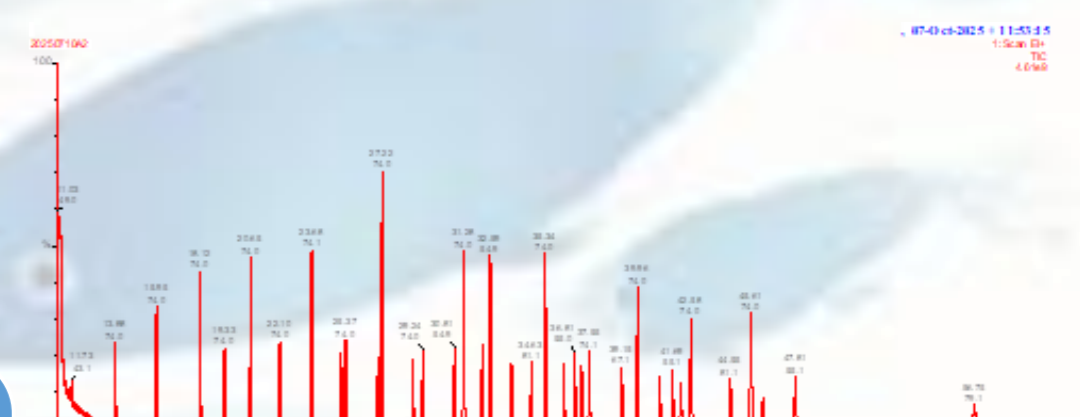
GC/MS analysis



Results quantification



Calculation of profile of fatty acids (percentage % fatty acid /fat)



• Results and discussions

Fatty acids	(%)/ fat
C18:0	5.82
C18:1 cis (n9)	21.3
C18:1 trans (n9)	5.66
C18:2 cis (n6) - Linoleic acid	2.84
C18:3 (n3) - α - Linolenic acid	2.1
C20:3 (n3)	1.97
C20:5n3 (EPA)	1.64
C22:2 (n-6)	13.09
C22:6n3 (DHA)	5.5

•The results of the fatty acid profile are expressed as the amount of total fat (fats = 0.50 g/100 g product - wet fish)

• Conclusion

European hake offers various benefits for human health and is increasingly used as an ingredient in different food products. Understanding its lipid and fatty acid compositions is of crucial importance for both consumers and food technologists.

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