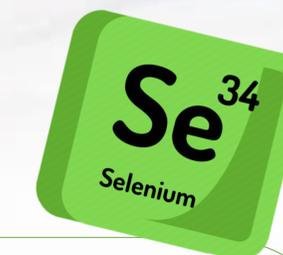


Mackerel seasonality effect on Se content

Rego A.¹, Ventura M.¹, Gueifão S.¹, Coelho I.¹, Cardoso C.², Afonso C.², Bandarra N.², Isabel Castanheira¹

¹ Department of food and nutrition, National Institute of health Doutor Ricardo Jorge, Lisbon

² Portuguese Institute for Sea and Atmosphere, Lisbon
andrea.rego@insa.min-saude.pt



AIM

Selenium (Se) is an essential micronutrient that can become toxic when ingested in high concentrations. The human being can obtain Se through the consumption of food, dietary supplements, water and exposure to ambient air. The food source is the most abundant and the main contributor to the daily intake of Se.

Fish is one of the best sources of Se, and the Portuguese Mackerel is one of the most important and abundant species in Portugal. It is rich in several vitamins and Se, due to being a predator. The work presented integrates part of the first task of the project NewFood4Thought that aims at the prevention of cognitive decline through nutrient combination. The aim is to study of the influence of seasonality in the levels of Se in Mackerel samples collected throughout the year.

MATERIAL AND METHODS

Mackerel samples were collected monthly, from March 2019 to December 2019, and prepared in ten pools.

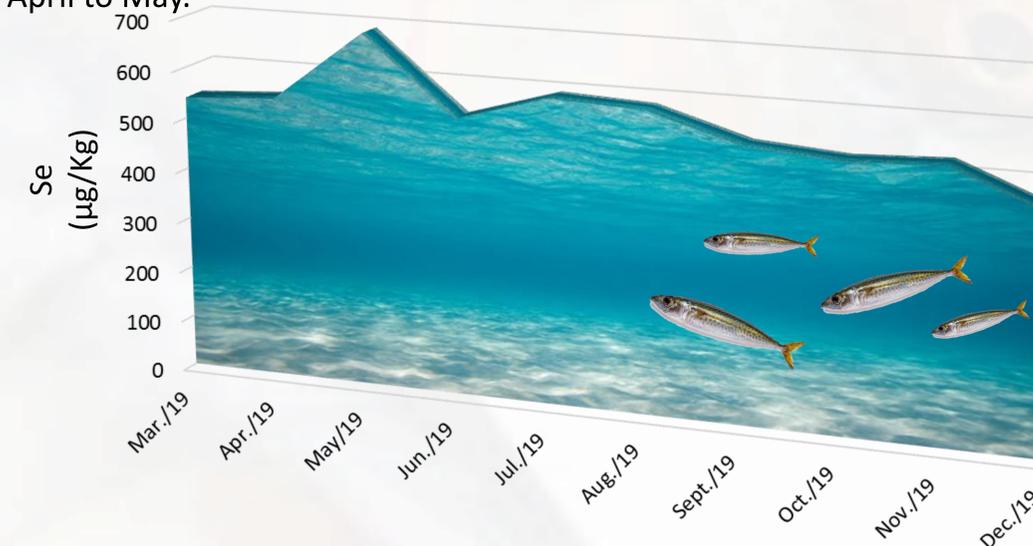
Se was determined by an inductively coupled plasma mass spectrometer (ICP-MS) preceded by acid digestion in a graphite hotplate using a previously validated time and temperature program. All standards and reagents were of high purity (over 99.5%).

As quality control, a minimum of three replicate analyses was performed for each sample. Se calibration curve was made with no less than five standards in different concentrations with a correlation coefficient superior to 0.9995. Spiked samples and a certified reference material from fish muscle (ERM—BB422) were also used. All analyses performed were in accordance with ISO 17025:2017.

For statistical analysis, One-Way ANOVA and the Least Significant Test were used.

RESULTS AND DISCUSSION

Results showed insignificant variation of Se content between months, ranging from $462 \pm 27,5 \mu\text{g/Kg}$ to $605 \pm 27,5 \mu\text{g/Kg}$, with an average of approximately $540 \pm 45,8 \mu\text{g/Kg}$ except for a particular month, May. The Se content from May was significantly higher ($715 \pm 26,2 \mu\text{g/Kg}$). Cabral et al. (2002) showed that the mackerel diet consisted mainly in zooplankton (rich in Se and other vitamins) in spring and summer, fish and decapods in autumn and decapod larvae in winter. Martins et. al. (1996) referred that in the Portuguese continental coast the spawning season of Spanish mackerel, runs between February to March and April to May.



CONCLUSIONS

With the exception of May, Se content in mackerel remained constant throughout the year. The high Se content found in May samples may be related to mackerel's spawning season and feeding habits. However, further studies are needed to confirm these preliminary conclusions, namely studying the Se content monthly for several years.

ACKNOWLEDGMENT

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