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Introduction



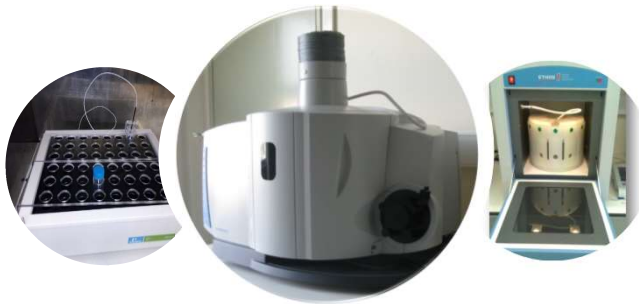
The increasing popularity of vegetarian diet has induced science to better study this foods. As long as it includes necessary intake of nutrients, such as minerals, can be beneficial to health. In addition, concern about food safety has increased in recent years, leading to studies to evaluate food contamination by toxic metals, regarding food poisoning prevention and public health improvement.

Purpose

The purpose of this work was to quantify manganese (Mn), iron (Fe), zinc (Zn) and mercury (Hg) contents in different foods for a plant-based diet.

Material and Methods

- ✓ Samples selection was based on data collected from the National Food, Nutrition, and Physical Activity Survey (IAN – AF) 2015 – 2016, regarding a variety of foods normally included in a vegetarian diet, giving preference to those not yet included in the Food Composition Table.
- ✓ Samples (n=12), collected in great Lisbon, were grinded and homogenized and analyses were carried out in compliance with the ISO/IEC 17025.



- Samples were submitted to acid digestion in a microwave or graphite block acid digestion (DigiPREP).
- Mn, Fe and Zn levels were determined using an Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES).

■ Total mercury content was determined by a thermal decomposition and amalgamation atomic absorption spectrophotometry (TDA/AAS).



Results and Discussion

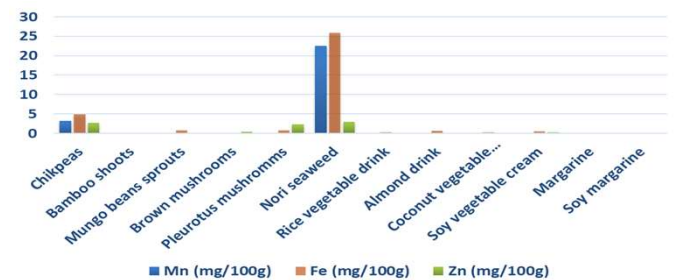
Mineral levels ranged from:

- **Mn:** <Limit of Quantification (LoQ) (mushrooms, vegetable drinks and margarines) - 22.6 mg/100g (seaweed Nori).
- **Fe:** <LoQ (bamboo shoots mushrooms, brown mushrooms vegetable drinks, rice vegetable drink and margarines) - 25.8 mg/100g (seaweed Nori).
- **Zn** <LoQ (shoots, vegetable drinks and vegetable yogurt) - 2.98 mg/100g (seaweed Nori).

Hg contents:

- All samples < LoQ, with exception of pleurotus mushrooms, with low but quantified value (8.9 µg/kg).

In general, analyzed foods presented mineral values < Recommended Dietary Allowance (RDA) /100 g food, with exception of seaweed Nori, that exceed the RDA for Mn and Fe, and chickpea that surpasses the RDA for Mn.



Conclusions

This study provides support for future studies regarding mineral content in vegetarian foods and allowed updating the Portuguese Food Composition Table, with data on plant-based foods. As expected, vegetarian food samples presented low levels of studied minerals, with the exception of grain and seaweed. Since mercury is a contaminant, pleurotus mushrooms may require attention to its presence, despite there is no legislation for mercury levels in mushrooms. It is concluded, therefore, that the vegetarian dietary pattern must be well planned, taking into account the importance of a varied, balanced and complete diet, including adequate food choices, in order to supply the deficit and reduce exposure to toxic substances.