Traditional foods from the Black Sea Area countries: minerals and trace elements content

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BACKGROUND/AIM

Minerals and trace elements are essential for biological processes and play a vital role in normal growth and development. Low intake or reduced bioavailability of minerals may lead to deficiencies, which causes impairment of body functions. Due to the unquestionable importance of minerals in human nutrition, sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), iron (Fe), copper (Cu), phosphorous (P), zinc (Zn), manganese (Mn) and selenium (Se) are being determined, as well as other nutrients, in traditional foods from Black Sea Area countries, in the frame of the European Project BaSeFood (Sustainable Exploitation of Bioactive Components from the Black Sea Area Traditional Foods) [1].

The aim of this study was to produce new analytical data of minerals and trace elements content in traditional foods in order to highlight their potential positive health effects.

MATERIALS AND METHODS

- All minerals and trace elements were analysed by Inductively Coupled Plasma – Optical Emission spectrometer (ICP-OES) except for selenium which was performed by graphite atomic absorption spectroscopy in the selected traditional foods from Black Sea Area countries.
- The methods used in this study are accredited by ISO/IEC17025 or the laboratory participates successfully in proficiency testing schemes.

RESULTS AND DISCUSSION

CEREAL OR CEREAL BASED FOODS

- In this group, the highest sodium content was found in “Cozonac,” a traditional Romanian cake, and the highest zinc content was found in “Bread,” a traditional Romanian bread.
- All the foods analyzed in this group presented the highest Na and Zn contents and the lowest Fe content, among the foods analyzed from this group.
- 1. Baked types of pastry stuffed with pumpkin.
- 2. Traditional pumpkin cake.
- 3. Traditional crumb cake.
- 4. Wheat flour

VEGETABLE OR VEGETABLE BASED FOODS

- Transylvanian green lentil soup had the highest Fe content. The highest content in Fe and Zn was observed in “Sour soup with layers of pastry stuffed with pumpkins” and “Green lentil soup respectively, for the other traditional foods the content was lower than 1.63 mg/100 g (data not shown) and for the other traditional foods the content was lower than 2.0 mg/100 g (data of quantification).

FRUIT OR FRUIT BASED FOODS

- In this group, sturgeon fish and raw sausages had a selenium content higher than 8.0 mg/100 g (LOQ) and vitamin D content of vitamin D3 content higher than 2.0 mg/100 g (LOQ). All foods had a low content of Ca and Mg, except for some:
- 1. Sturgeon fish
- 2. Culurgiones
- 3. Kechirian nut
- 4. Pastirma
- 5. Fruit of the maringues cherry laure

OILSEEDS OR OILSEED PRODUCTS

- Roasted sunflower seeds had a selenium content of 23.0 mg/100 g (data not shown) and for the other traditional foods the content was lower than 1.63 mg/100 g (data of quantification).

HERBS, SPICES AND AROMATIC PLANTS

- A very high Na content was found in this group for only one analyzed food, “Dill.” In this group, all the foods had a sodium content above LOQ. Vitamin D3 content was the highest Fe content and collagen tissue with garlic and garlic

LOW OR NON-ALCOHOLIC FERMENTED FOODS

- Also, in this group, all foods had a selenium content of 0.30 mg/100 g (LOQ) and vitamin E content from 0.153 to 0.347 mg/100 g and from 0.217 to 0.347 mg/100 g.

CONCLUSION

A great variability was found for minerals content in the analysed traditional foods from Black Sea Area countries. Roasted sunflower seeds is one of the foods that contributes the most for Fe and Zn intake, while baked layers of pastry stuffed with pumpkin and tetaill dill bread contribute significantly for Na intake. Careful assessment is required in order to evaluate the consequences that these foods might have in human health taking into account the recommended daily intakes of minerals.

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