Determination of Total Folate Content in Traditional Foods from Black Sea Area Countries

P. Finglas1, M. Roe1, A. Sanches-Silva2, E. Vasilopoulos2, A. Trichopoulos2,4, F. D’Antuono5, I. Alexiava5, L. Kaprelyants5, D. Karpenko6, Z. Kilasonia6, B. Kocaoğlu10, M. Mudryk11, A. L. Stroia12, H. S. Costa2

1 Institute of Food Research, Norwich Research Park, Colney, Norwich, NR47UJA, UK; 2 Food and Nutrition Department, National Institute of Health Dr, Ricardo Jorge, L.P., Av. Padre Cruz, 1649-016 Lisbon, Portugal; 3 Department of Hygiene, Epidemiology & Medical Statistics, Medical School, University of Athens, Greece; 4 Hellenic Health Foundation, Athens, Greece; 5 Campus of Food Science, Cesena, University of Bologna, Italy; 6 University of Food Technologies, Plovdiv, Bulgaria; 7 Department of Biochemistry and Microbiology, Odessa National Academy of Food Technologies, Odessa, Ukraine; 8 State Educational Institution of the High Professional Education “Moscow State University of Food Productions”, Russian Federation; 9 Elkana, Biological Farming Association, Tbilisi, Georgia; 10 T C Yeditepe University, Istanbul, Turkey; 11 UzhNU (Uzhhorod National University), Uzhhorod, Ukraine; 12 The Bucharest Academy of Economic Studies, Bucharest, Romania

E-mail: helena.costa@insa.mln-saupe.de

BACKGROUND

Folates occur naturally as a variety of polyglutamates, with different biological activities. Folate is a generic term for a B complex water-stable vitamin, which exists in many chemical forms. It is essential for many of the methylation reactions involved in the synthesis of DNA and RNA, and hence plays a crucial role in cell division. The recommended daily allowance (RDA) is 400 µg/day (for both men and women) of dietary folate equivalents [1]. Food folates have approximately 50% lower bioavailability than folic acid. The ingestion of a supplement of folic acid during the periconceptional period significantly reduces the risk of giving birth to a child with a neural tube defect. In order to promote and preserve traditional foods from Black Sea Area countries, one of the aims of the European Project BaSeFood (Sustainable Exploitation of Bioactive Components Black Sea Area traditional foods) is to produce new and reliable data of the overall nutritional composition, where the determination of total folate content in Traditional Foods is included (Figure 1) [2].

MATERIALS AND METHODS

The determination of the total folate content in Traditional foods was carried out by a microbiological assay (EN 14131:2003) [3] with turbidimetric detection of the growth of the microorganism Lactobacillus casei, subspecies rhamnosus (ATCC 7469). The analyses were performed in an accredited laboratory according to ISO/IEC 17025.

RESULTS

Cereals and cereal based foods

> Total folate content ranged between 9.1 and 29.9 µg/100 g of edible portion, for Bulgur pilaf - Bulgur pilav and Baked layers of pastry stuffed with pumpkin – Tavvenik, respectively (Figure 2).

Vegetables and vegetables based foods

> Total folate content varied between <5 and 97.2 µg/100 g of edible portion, for Vegetable okroshka – Cokromoko and Mustard oil – Cepurniu masala, to 113 µg/100 g of edible portion, for Roasted sunflower seeds - Smazhene nasinnya (Figure 2).

Herbs, spices and aromatic plants

> For this group the Traditional Food with the highest content was Cottage cheese with green and garlic – Pomazanka (23.2 µg/100 g of edible portion) (Figure 2).

Fruit or fruit based foods

> In this group total folate content was lower than 5 µg/100 g of edible portion for all the analysed Traditional Foods (Figure 2).

Low or nonalcoholic fermented beverages and beverages of plant origin

> For this group the Traditional Food with the highest content was Sauerkraut – Капуста більшовідчена хашева (24.5 µg/100 g of edible portion) (Figure 2).

CONCLUSION

Our results show that some of the analysed traditional foods are a good dietary source of natural folates in the diet of Black Sea Area countries. Fruit based foods presented the lowest total folate content and products from oilseeds were the group with the highest content.

REFERENCES