Nutritional value of enriched food products available in Poland

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Background/aims

A wide range of foods with added vitamins and minerals is nowadays present on the Polish market and consequently data regarding nutritional value of numerous enriched food products (both obligatory and voluntarily) are included in Polish food composition tables (FCT). The aim of this study was to give an overview of enriched food products listed in Polish FCT, and to compare analytical values with those declared on labels in calcium and vitamin C enriched foods. Taking into consideration prevention of deficiencies, products enriched with vitamin C and folic acid as well as calcium play a special role in our diet. In Polish FCT values for vitamins and minerals in enriched food products are based on data provided by producers.

Methods

Information on the nutrient content of enriched foods in Polish FCT as stated by the producers was collected. Further, the content of calcium was determined in 74 food samples enriched with this nutrient: milk products, breakfast cereals, multifruit and carrot drink, instant foods, confectionery. Calcium was analysed by ASA (UNICAM 939 spectrometer) method with air/acetylene flame and 422.7 nm wavelength. Vitamin C was analysed in 92 samples of fruit and vegetables juices and drinks, breakfast cereals, instant food products and sweets with added vitamin C. This vitamin was measured by titration or spectrometry according to Polish standard PN-A-04019:1998. Analytical values were compared with those given on the labels.

Results

In Polish FCT nutritional values for 8 obligatory enriched foods and 31 foods for which enrichment is voluntary, are given. The analytical part of this work showed that in 27% of samples detected amounts of vitamin C were more than 100% higher in comparison with declaration given in nutrition labelling of these products. Such situation was caused by overdose of that nutrient for technological reasons in enrichment process. In case of calcium enriched foods for 89% of examined samples differences between analytical values and those stated on the labels did not exceed 20%.

Conclusions

To ensure high quality data for vitamin and mineral contents for food labelling purpose it is planned to set acceptable tolerance ranges between declared and measured quantity of nutrients in food products.

In order to improve estimation of actual intake of micronutrients in epidemiological studies continuation of activities to identify and to examine enriched products available on the market to extend information in FCT is necessary.

Table 1. Differences between determined and declared content of calcium

Difference between determined and declared value	Number of samples (n=74)			
	In particular groups of food products			Total
	Milk products (n=46)	Cereals (n=18)	Others (n=10)	
to ± 10%	33	14	4	51
from ± 11% to ± 20%	10	4	1	15
from± 21% to ± 30%	1	0	2	3
from ± 31% to ± 40%	0	0	3	3
from ± 41% to ± 50%	2	0	0	2

Table 2. Differences between determined and declared content of vitamin C

Difference between determined and declared value	Number of samples (n=92)				
	In particular groups of food products				Total
	Juices, drinks (n=67)	Cereals (n=7)	Instant foods (n=13)	Sweets (n=4)	
under -20%	4	0	3	0	7
to ± 20%	14	3	3	4	24
from + 21% to + 100%	24	4	7	0	36
from + 101% to + 200%	20	0	0	0	20
above +200%	5	0	0	0	5

Fig. 1. Division of studied samples of food with addition of calcium according to differences between determined and declared values

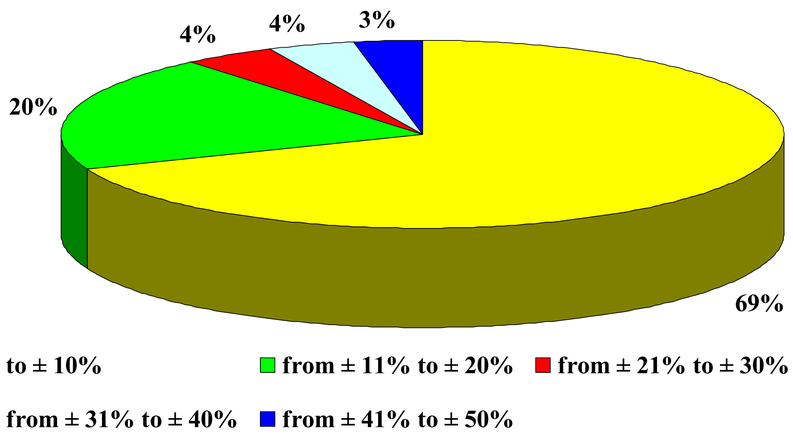

Fig. 2. Division of studied samples of food with addition of vitamin C according to differences between determined and declared values