

Comparative analysis of vitamin content of food supplements marketed in Hungary

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According to the Order of Hungarian Minister of Health No. 37/2004. (IV. 26.) food business operators must notify their food supplements at National Institute for Food and Nutrition Science before placing them to the Hungarian market. National authorization before marketing of food supplements ended at first of May 2004. Producers of food supplements have been allowed to use vitamins and minerals in chemical forms exclusively given in supplements I. and II. of the Decree mentioned above. Since 1st of May 2004 more than 4500 food supplements have been notified in Hungary. This number increases daily by four but in the first four months of 2009 nearly nine products per day were included into the list of notified products. More than half of the notified products contain vitamins, solely or in combination with other vitamins, minerals, plant extracts or isolated substances, as well. Most frequently used vitamins are C, E and Bs, including B1, B2, niacin and B6, at smaller frequency other vitamin Bs, vitamin A, D and K are the components of food supplements. Products contain vitamins at different levels but majority of them have vitamins not more than RDA (recommended dietary allowances). Controlling of the real composition of the products before marketing depends only on the decision of the food business operators; the market control authorities screen the products only at limited frequency.

In the frame of PHARE 2005/17/520.01.01 transition facility project National Institute for Food and Nutrition Science was provided with a Thermo Surveyor Plus HPLC-DAD/FLD equipment which could serve as the tool for the screening of the level of vitamins in food supplements sold in Hungary. Validated methods were set out for separating, qualifying and quantifying water and fat soluble vitamins with different chemical structure in food supplements. The most important element of the methods was the sample preparation step (direct extraction, saponification, or acid base solution) of products with different forms as hard and soft gel capsules, tablets, and so on, for obtaining the whole amount of active substances. The preparation step was followed by the separation of different vitamins and chemical forms on a reversed phase chromatography column and finally detection based on UV signal of the molecules. With the use of newly developed methods screening of vitamin content of about fifty food supplements found in Hungarian market was done. It can be stated that most part of the products contain vitamins at level indicated on the label, only in certain cases significantly higher or lower level (20%) of vitamins could be detected. There were some products where declared amount of vitamin indicated in the label did contain only the added vitamin and amount coming from natural source was not summed up. Methods developed are suitable for separation, qualifying, as well as quantifying vitamins with different chemical structure and monitoring the composition of food supplements marketing in Hungary.

Exogenous selenium influences the reactive oxygen radical production and restores intestinal perfusion in a porcine model of cardiac tamponade

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Selenium (Se) is essential for the function of redox regulator enzymes that have major roles in cardiovascular diseases with transient hypoxia, but the clinical value of Se replacement is still controversial.

The aim of our study was to assess the effects of Se treatment on reactive oxygen intermediates (ROI) production and splanchnic circulatory consequences in experimental cardiac tamponade (CT).

Anesthetized, thoracotomized minipigs (n=6) were subjected to acute CT by intrapericardial fluid infusion; the mean arterial pressure was kept at 40 mmHg for 60 min. After removal of the pericardial fluid, macrohemodynamic changes, small intestinal flow and pCO₂ gap (tonometric probe), blood ROI (superoxide and H₂O₂ production, chemiluminometry), plasma