

Vitamins and minerals

Rapporteur's report

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Presentations

Adequate intakes of vitamins and minerals foods, food fortification or supplements?

Brittmarie Sandström, The Royal Veterinary and Agricultural University, Denmark.

An example of an integrated programme to increase consumption of folic acid in women of childbearing age

Lynn Stockley, Food & Nutrition Consultant, UK.

Vitamins and minerals in foods-Legislative aspects

Basil Mathioudakis, European Commission, Health and Consumer Protection Directorate General

Discussion following each of the three presentations was mainly concerned with detailed points that arose from the presentations, although some minor technical/editorial points in the Working Party reports were also pointed out. Interesting and perhaps significant points that emerged included the view of Prof Sandström that selenium in the diet might have a role in the prevention of cancer and cardio-vascular disease, though this was by no means so clear cut as the accepted deficiencies of iron and iodine found in the EU.

Following Lynn Stockley's presentation considerable interest was shown in the extent and thoroughness of the campaign to improve the folate status in UK women contemplating pregnancy and during early pregnancy. As it was an expensive programme it is necessary to know the extent of the success of this campaign and data are awaited in order to evaluate the reduction in incidence of neural tube defects at birth as a result of increasing the public's awareness.

The role of the legislator in ensuring that the people of the EU are guaranteed an adequate nutrient intake, especially in relation to dietetic foods, food supplements and the addition of

nutrients to food was explained by Dr B Mathioudakis.

In the course of the general discussion it was widely agreed that the European Commission should revise its Recommended Daily Allowances every 5 years, mainly because of rapidly advancing nutritional knowledge. The group emphasised that any changes that were made, especially in relation to vitamins and minerals, should be based on a systematic, evidence-based approach in order not only to prevent deficiencies but also to have an optimal intake to reduce the risk of disease and to prevent the adverse consequences of excessive intake.

It was felt that the European Commission should review the 1990 Nutrition Labelling Directive with the object of making the labelling more comprehensible. Perhaps this could be developed using the Internet.

It was pointed out that some confusion might arise because of varying recommended intakes in different EU countries and the example was given of Germany and Austria having dissimilar iodine RDAs though occupying a comparable land mass.

Finally, every one agreed that much more emphasis should be placed on educating the peoples of the EU to consume a variety of foods.

Abstracts

Adequate intakes of vitamins and minerals – foods, food fortification or supplements?

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Keywords

nutrient density, bioavailability, iron, iodine, folate, food fortification, supplements

The biochemical roles of vitamins and minerals have been known for decades and for most of these nutrients overt deficiency is rare in Europe. However, signs of marginal status of iron, iodine, folate and vitamin D exist in a non-negligible proportion of the EU population. This can partly be ascribed to decreasing energy expenditure and a concomitant decreased nutrient density of the diet. In addition, adequate intakes of vitamins and minerals may have to be extended beyond the amounts needed to prevent classical deficiency to also account for a putative role in reducing the risk of degenerative diseases such as cardiovascular disease, cancer and osteoporosis.

Iron deficiency is one of the main nutritional disorders in Europe¹. A high prevalence of depleted iron stores and even overt iron deficiency anemia is observed in women in the fertile age period and in children. The clinical consequences of depleted iron stores are unclear, while iron deficiency anemia has functional consequences and increases perinatal mortality in pregnant women²⁻⁴. Iron intake is closely related to energy intake and an increased physical activity with concomitant higher energy and food intake is one way to increase iron intake. Changes in selection of foods or in food patterns are other means. Analysis of food patterns in 6 European countries identified red meat, offal and vegetables to be associated with higher iron intakes. However, variations in total iron intake between populations can only partly explain differences in prevalence of iron depletion. A higher prevalence in the Northern part of Europe is most likely due to a diet composition with a poorer availability. Thus, food-based dietary guidelines to improve iron status have also to take into account means to increase iron absorption promoting factors (e.g. muscle foods and vitamin C rich foods) and reduce inhibiting factors (e.g. phytate). In addition, food fortification or supplementation may be necessary in specific groups.

Mild to moderate iodine deficiency is also common in certain parts of Europe⁵. Severe iodine deficiency leads to irreversible mental retardation. However, also in milder forms of iodine deficiency neurological and neuropsychological impairments have been reported. Iodization of salt is probably the most efficient public health approach to prevent iodine deficiency.

A low folate status increases the risk for neural tube defects⁶ and may increase the risk for cardiovascular disease and possibly also colorectal cancer. Food-based dietary guidelines aiming at an increased intake of fruits and leafy vegetables would improve folate intake, but may not be sufficient to reach the intakes recommended for reducing the risk for neural tube defects and supplementation or food fortification with folate may be necessary.

Conclusions

The mineral and vitamin intake of EU populations can be improved by food-based dietary guidelines aiming at an increased nutrient density i.e. a diet low in fat, refined sugars and alcohol. Dietary guidelines aiming at an increased intake of a specific nutrient have to consider the impact on intake of other nutrients. An increased intake of red meat may for example be a mean to improve iron status but may also increase the intake of saturated fats. For specific population groups food fortification or supplementation may be necessary. A careful evaluation of the risks and benefits of these latter strategies is required as there is a possibility for negative interactions between these nutrients and adverse effects at higher intakes.

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An example of an integrated programme to increase consumption of folic acid in women of childbearing age

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Keywords

Folic acid, folate, intervention, National campaign

Working Party Three (WP3) was charged with the responsibility for outlining the most effective strategies to implement dietary guidance. The core message of the WP3 report is that the most successful interventions are integrated, multidisciplinary, address individuals, communities, the broader environment, and the relevant policy and legislative frameworks.

In this Case Theme on Vitamins and Minerals, a specific example is used to illustrate such an approach. In the United Kingdom at the beginning of the 1990s, an Expert Committee Report recommended that prior to conception and for the first twelve weeks of pregnancy, all women should increase their daily folic acid intake by 400 micrograms to reduce the risk of neural tube defects in first babies. In 1996 the National Health Promotion Agency in England, the Health Education Authority, launched an integrated programme to increase the consumption of folic acid in women of childbearing age. The three strands to achieving this were to encourage the consumption of foods naturally rich in folate, to increase the availability and intake of foods fortified with folic acid, and to encourage the use of appropriate dose folic acid supplements in women planning a pregnancy.

The programme was based on creating partnerships with the voluntary, public and commercial sectors, at both local and national levels. The three elements were a) public communication including media advocacy b) working with health professionals, and c) working with the commercial sector.

The spontaneous awareness of folic acid among women of childbearing age increased from 9% in 1995 to 49% in 1998. There was a significant increase of about 14% in the numbers of women who claimed to have taken folic acid supplements. In 1996 55% of health professionals said that they would advise women to take folic acid, and this rose to 71% in 1997.

The number of foods fortified with folic acid increased. For example in 1995 eight types of bread were fortified, and this rose to 20 in 1997. The number of supplements available at an appropriate dose increased by about twofold.

It is still relatively early to expect changes in data on the incidence of neural tube defects, but the process indicators outlined are very positive. The four elements which appear to have contributed particularly to the success of this programme are: needs assessment research with target audiences and partners; the formation of effective partnerships with a variety of sectors; an integrated approach; and effective climate setting.

Vitamins and minerals in foods-legislative aspects

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Keywords

Vitamins, minerals, food supplements, fortified foods

According to scientific opinion an adequate and varied diet should and could under normal circumstances, with very few exceptions, provide all the necessary nutrients for normal development and maintenance of a healthy life. However changes in life-styles and dietary habits may lead to inadequacies of intakes of essential nutrients such as vitamins and minerals. Furthermore scientific research on the function of those nutrients has recently established real or potential benefits to health that may accrue from the intake of recommended or higher than currently recommended levels of these nutrients.

The industry, encouraged by consumer demand, has introduced in the market a number of products containing vitamins and minerals. These range from products to which these nutrients are added for the purpose of restoration, nutritional equivalence of substitute products or fortification to products that are concentrated sources of these nutrients marketed in dose form in order to complement intakes from the normal diet.

The development of differing national legislation relating to these products necessitates harmonisation at EU level in order to ensure a high level of public health and consumer

protection and facilitate the free circulation of these products within the Community. A proposal for a Directive on Food Supplements containing vitamins and minerals was transmitted by the Commission to the European Parliament and the Council in May 2000. The proposal is in line with the basic principles of food law, namely that the products should be safe and carry adequate and appropriate labeling in order to allow consumers to make choices that are suitable for their needs. It proposes:

- A definition of the products
- A list of vitamins and minerals that can be present in the products
- To establish upper levels of vitamins and minerals in the products based on scientific risk assessment and taking into account potential intakes from all dietary sources
- Specific labeling rules appropriate for these products
- A proposal for a Directive on the addition of vitamins and minerals to foods, based on the same principles, is expected by the end of 2000.