

**SPORT DIETARY SUPPLEMENTS:  
ARE THEY ILLEGALLY MARKETED IN GREECE?**

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**Summary**

The present study was undertaken to investigate the legal or Illegal mode of marketing of "food supplements", especially multivitamines and minerals, in greek pharmacies and/or in "health" shops.

233 prospectus, including 251 substances, were examined if they are in concordance with the national legislation and European directive 2002/46/EC on food supplements, in what concerns the content and dose of each substance, listed on the label.

Key words: Food Supplements, Sport, Marketing, Legislation.

**Introduction**

The use of dietary supplements by elite athletes is widespread. Many of these supplements confer no performance or health benefit, and some may actually be detrimental to both performance and health when taken in high doses for prolonged periods.(1)

Some supplements contain excessive doses of potentially toxic ingredients, while others do not contain significant amounts of the ingredients listed on the label. There is also now evidence that some of the apparently legitimate dietary supplements on sale contain ingredients that are not declared on the label but that are prohibited by the doping regulations of the International Olympic Committee and of the World Anti-Doping Agency and result in positive doping tests.  
(2)

Contaminants that have been identified include a variety of anabolic androgenic steroids (including testosterone and nandrolone as well as the pro-hormones of these compounds), ephedrine and caffeine.

Conform to a recent Decision of Greek Ministry of Health (3) "...*food supplements are considered products that contain one or more condensated nutritional ingredients, for people with a poorly balanced daily diet and that they don't belong to common food products, and aren't medicines conform to medicinal legislation*".

Conform to law nr.1316/83 and nr.1965/91 (4) the daily recommended doses were standardised for "food supplements".

The aim of our study is to investigate whether "food supplements" are legally or illegally marketed in Greece.

### Methods

This study was carried on a regional basis, in Patras, Greece and were examined 13 booklets including 233 prospectus of "food supplements", marketed in local pharmacies and 'health' shops. We examined the content of substances labeled in each product, in comparison with the recommended Dose Allowance (RDA), especially for vitamins contained. The results are expressed as percent (%), with simple statistical analysis.

### Results

2 out of 13 booklets (15,4%) referred that had had the permission of the Pharmaceutical National Organisation ([www.eof.gr](http://www.eof.gr)) and only for 3 out of 233 products (1,29%). 5 out of 233 products are marketed by pharmacies (2,14%) and the rest 97,86% by 'health shops'.

In 53 multivitamin products (22,75%) contained 121 different vitaminic complexes, we observed i) no information on the label, about the vitaminic content in 6 out of 53 products (11,3%), ii) lower dose than the RDA in 19 out of 121 substances (15,96%), and iii) a two- or three- fold higher dose than the RDA in 75 out of 121 substances (63,02%).

There was no any reference on the label about a prohibited substance contained in the examined products.

### Discussion

The widespread use of "food supplements" by athletes poses them in the danger of a positive doping test if they contain prohibited substances, not declared in the label. By a great research conducted by IOC during 2000-2001, it is well known that a great amount of supplements are contaminated with steroids, ephedrine and other prohibited substances. (5)

In Greece, the majority of the "food supplements" are marketed by "health" shops and pharmacies but almost all of them don't have the permission of the National Pharmaceutical Organisation, named eof.

Conform to our knowledge, this research although not extended, is the first conducted in Greece and concerning the mode of marketing of "food supplementts". We observed that in 11,3% of the examined prospectus, there was no information about the content and the dose of each substance, indicating that their "traffic" imposes danger for the users.

Moreover, 15,96% of multivitamins, had had a lower dose than RDA, and this fact poses questions about the usefulness by the consumers. In contrast, a great proportion of multivitamins was overdosed, even two-, or three fold than RDA. This fact poses the consumers in the danger of hypervitaminosis or other complications under special medical conditions.

It is well known that intake of high levels of vitamins and even minerals, can lead to toxic side effects. (6)

For example, excess intake of vitamin C can be harmful (7) as well as in combination with iron, which may cause damage in gastrointestinal tract (GI) and initiate or aggravate symptoms associated with chronic GI disorders. (8)

Similarly, the long-term effect of creatine is still unknown but short-term side-effects such as cramping and dehydration have been reported. (9)

There are no sufficient data concerning the legal or illegal marketing of "food supplements" in our country and worldwide, although surveys show that the prevalence of supplement use is widespread among sportsmen and women, but the use of few of these products is supported by a sound research base and some may even be harmful to the athlete. (10)

In conclusion, the majority of "food supplements" are marketed illegally in Greece, without any chemical or pharmaceutical control by the national authorities. The multivitamin products are in a great proportion hyperdosed and preclude health dangers for the consumers, especially young athletes and adolescents bodybuilders.

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