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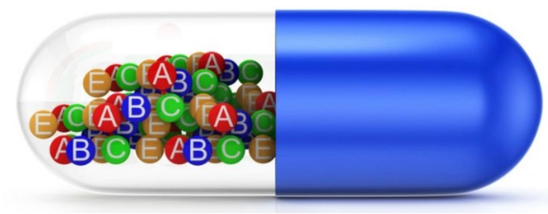
FAT-SOLUBLE VITAMINS IN FOOD SUPPLEMENTS: DO THE LABELS FOLLOW THE RECOMMEND DOSES?



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INTRODUCTION

Adequate vitamins consumption is indispensable for the maintenance of health and to prevent disease. **Both poor and overdose intakes may result in adverse health effects** [1].

Recommended Daily Allowance (**RDA**) is the average daily level intake sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals[2] and Tolerable Upper Intake Level (**UL**) is the maximum level of total chronic daily intake of a nutrient judged to be unlikely to pose a risk of adverse health effects to humans[3].

Owing the ability of **fat-soluble vitamins** to accumulate in the liver and adipose tissue, they present a higher potential for toxic effects than water-soluble vitamins.

Adverse effects from excess of fat-vitamins

A	Visual disorders, liver and kidney damage, birth defects
D	Muscle and joint pain, cardiovascular and renal disorders
E	Hemorrhage, higher risk of prostate cancer
K	Coagulation disorders

AIM

To evaluate if daily doses of fat-vitamins (vit) mentioned in food supplements (FS) labels are in conformity with the RDA defined by European Union Directive [4].

MATERIALS AND METHODS

A total of **165 FS** sold in Portuguese pharmacies, supermarkets, health shops and on internet were examined for indicated daily intake and dosage of vitA, vitD, vitE and vitK.

Selection criteria: oral solid pharmaceutical forms for adults, containing at least one fat-vitamin in its composition, as stated in the label, regardless of FS purpose.

RESULTS

- **48% of FS** labels presented **doses of one fat-vitamin > RDA**
- **23% FS** presented **2 or more vitamins > RDA**
- Only **30% of FS** indicated all fat-vitamins doses ≤ RDA
- It is noteworthy that **some FS presented daily doses > UL defined by EFSA** [3]

Table I - Results of FS with fat-soluble vitamins

VITAMIN	A (µg)	D (µg)	E (mg)	K (µg)
N	73	142	95	32
RDA	800	5	12	75
N>RDA (%)	22 (30)	90 (63)	54 (57)	10 (31)
UL	3000	100	300	n.d.
N>UL (%)	3 (4)	11 (8)	2 (2)	-

n.d. – not defined

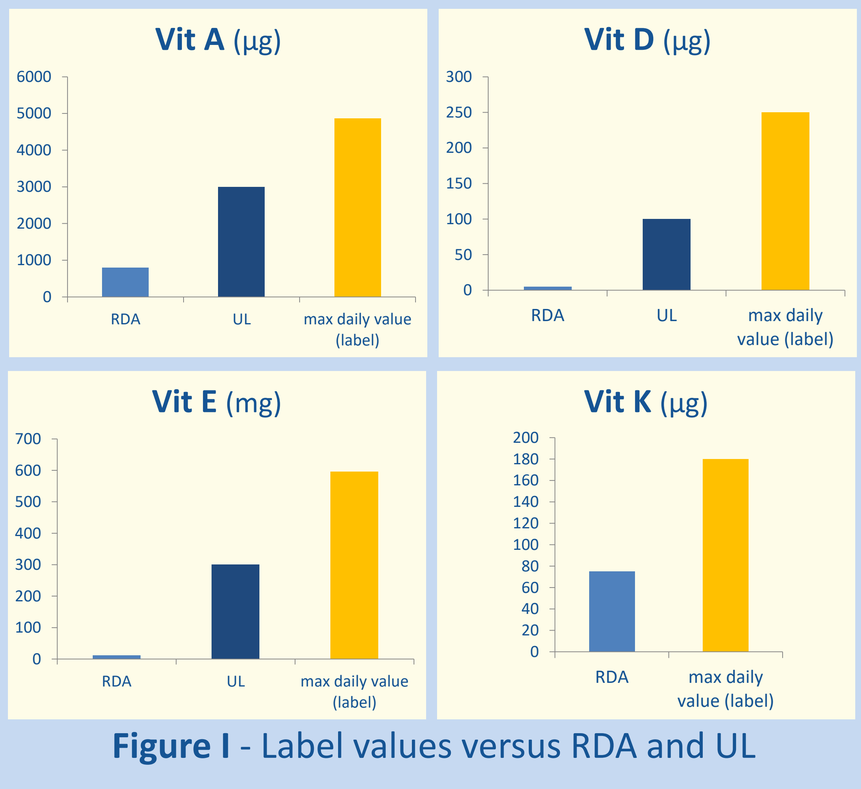

Figure I - Label values versus RDA and UL

DISCUSSION AND CONCLUSIONS

- Since **fat-vitamins** may be stored in the body and are slowly eliminated, the chronic intake of **high doses should be monitored** to prevent adverse effects of these vitamins;
- This study revealed that **the majority of FS labels recommended daily doses of fat-soluble vitamins above RDA, some even above UL**;
- Therefore, it is crucial that **doses of vitamins present in FS are reviewed ensuring the safety of these products**.

REFERENCES: 1. Verkaik-Kloosterman J, McCann MT, Hoeskstra J, Verhagen H. Vitamins and minerals: issues associated with too low and too high population intakes. Food Nutr Res. 012; 56: 5728. **2.** National Institute of Health. Nutrient Recommendations: Dietary Reference Intakes (DRI).hhtp://ods.od.nih.gov. **3.**EFSA - European Food Safety Authority. Tolerable Upper Intake Levels Scientific Committee on Food Scientific Panel on Dietetic Products, Nutrition and Allergies. 2006. http://www.efsa.europa.eu **4.**Commission Directive 2008/100/EC of 28 october 2008. Official Journal of European Union. 2008.p.9-12

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