



# READING THE LABELS: MINERAL DOSES IN DIETARY SUPPLEMENTS

Joana Simões<sup>1,2</sup>, Isabel Margarida Costa<sup>1,2</sup>, Alexandra Figueiredo<sup>1</sup>,  
 Guilhermina Martins Moutinho<sup>1,2</sup>, Maria Deolinda Auxtero<sup>1,2</sup>

<sup>1</sup> CiiEM, Centro de Investigação Interdisciplinar Egas Moniz;  
 IUEM, Instituto Universitário Egas Moniz

<sup>2</sup> PharmSci Lab – Innovative Solutions in Pharmaceutical Sciences, IUEM

## INTRODUCTION

- Food Supplements (FS), used regularly by many adults, can add significant amounts of nutrients and other ingredients, such as minerals, to the diet. Although the **Recommended Daily Allowance (RDA)** for most nutrients is mostly provided by diet, **mineral supplements (MS)** are one of the largest growing category of FS used. Given the high prevalence of MS use among consumers and their potential for **drug interactions**<sup>1</sup>, as well as **adverse effects of excess consumption**, special attention should be given to the **label recommended daily dose (LRDD)**. As intake increases above the **Tolerable Upper Intake Level (UL)**, the potential risk of experiencing adverse effects may increase<sup>2</sup>.

## AIM

The aim of this study was to evaluate if LRDD of MS are in conformity with the RDA defined by European Union Directive<sup>3</sup>.

## MATERIALS AND METHODS

- A total of **210 FS** sold in Portuguese pharmacies, supermarkets, health shops and on internet were examined for LRDD and dosage of **14 minerals (Ca, Cl, Cr, Cu, Fe, F, I, K, Mg, Mn, Mo, P, Se and Zn)**.
- Selection criteria:* **oral solid** pharmaceutical forms for **adults, containing any of the 14 minerals**, as stated in the label, regardless of the purpose of its use.

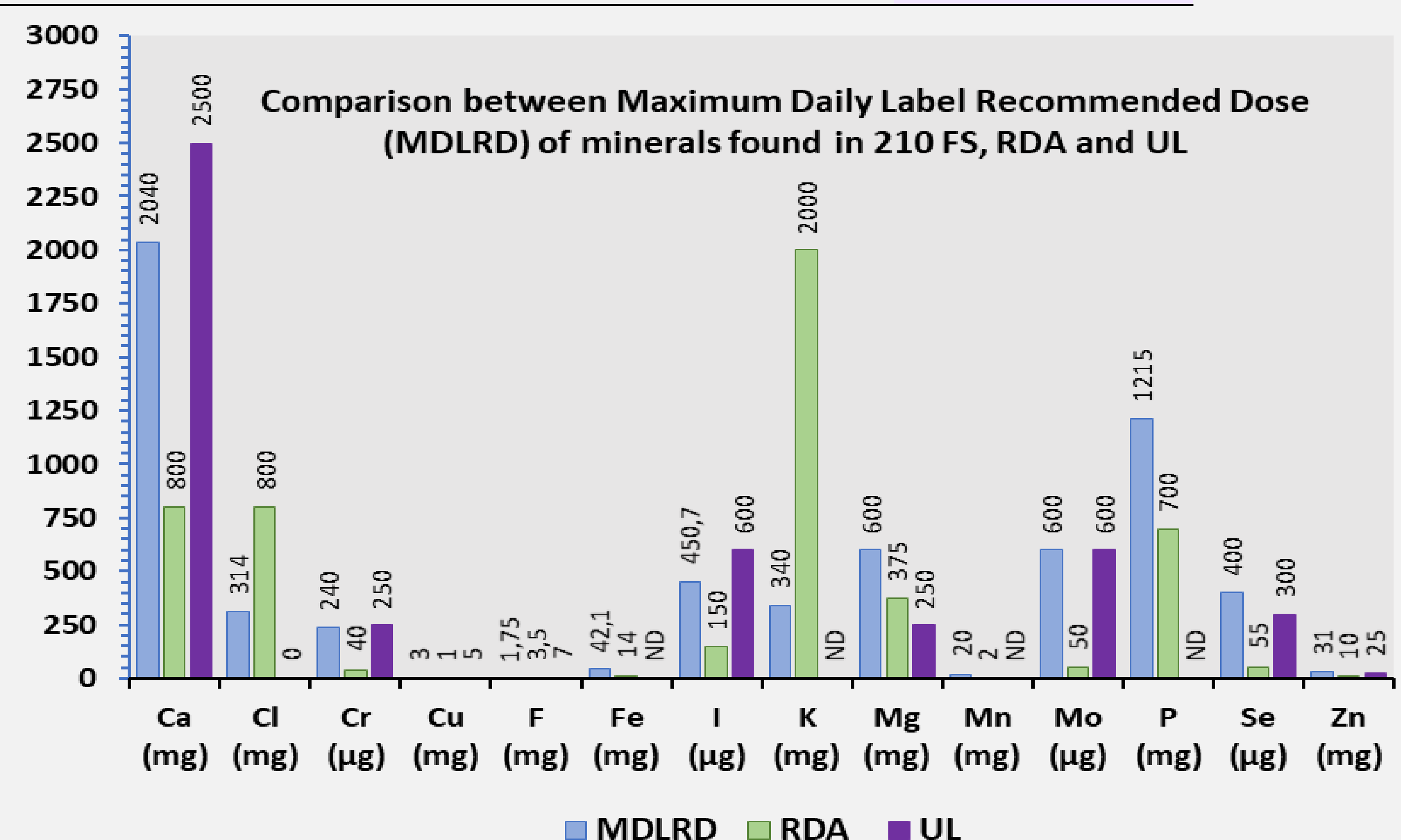
## RESULTS

Table I - Results of FS containing minerals.

Mineral	Ca	Cl	Cr	Cu	Fe	F	I	K	Mg	Mn	Mo	P	Se	Zn
Unit	mg	mg	µg	mg	mg	mg	µg	mg	mg	mg	µg	mg	µg	mg
Number of FS	100	5	102	132	104	4	94	32	136	116	53	40	123	156
RDA	800	800	40	1	14	3.5	150	2000	375	2	50	700	55	10
LRDD>RDA(%)	5	0	49	31	21	0	16	0	7.4	34	34	2.5	49	50
UL	2500	ND	250	5	ND	7	600	ND	ND	ND	600	ND	300	25
LRDD>UL (%)	0	-	0	0	-	0	0	-	22	-	0	-	1	3
MLRDD*	2040	314	240	3	42	1.8	451	340	600	20	600	1215	400	31

ND: not defined; \* Maximum Label Recommended Daily Dose

- 56% of FS labels** presented doses of **at least one mineral > RDA** and **6% of FS** indicated **LRDD > RDA**, for **7 or more minerals**.
- For most minerals (excluding **Cl, F and K**), **Maximum Label Recommended Daily Dose (MLRDD)** is **much higher than RDA**, with some FS mentioning doses of **Se and Zn above UL** defined by EFSA<sup>2</sup> (Table I).



## DISCUSSION AND CONCLUSIONS

- It is noteworthy that some minerals can be harmful in large doses with risk of oral and systemic manifestations: e.g. excess of Zn may promote hypocupremia, anemia, gait and balance disorders and paresthesias; excess of Se can cause alopecia, hair and nail brittleness and garlic odor to breath.
- This study revealed that, for most minerals, the majority of FS labels recommended daily doses above RDA and some even above UL.
- Therefore, it is crucial to review doses of minerals present in FS ensuring the safety of these products.

### ACKNOWLEDGMENTS:

The authors are grateful for the financial support provided for this study by Egas Moniz, CRL.