VITAMIN D

Universitat Autònoma de Barcelona

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1. Objectives

- Investigate the structure of vitamin D, biological functions and mechanisms of action.
- Investigate the causes and consequences of a vitamin D deficiency .
- Conclude whether there is a relationship between vitamin D levels and Covid-19.
- Research what applications in different products vitamin D may have in the food industry.

2. Introduction

- Vitamin D is fat-soluble and is considered a prohormone.
- It is a sterol and there are two molecular forms vitamin D2 and vitamin D3.
- Vitamin D2 may not be synthesized by the human body, but vitamin D3 is synthesized by the human body from 7-dehydrocholesterol by the action of UVB rays.
- Vitamin D develops different physiological actions.

3. Vitamin D metabolism

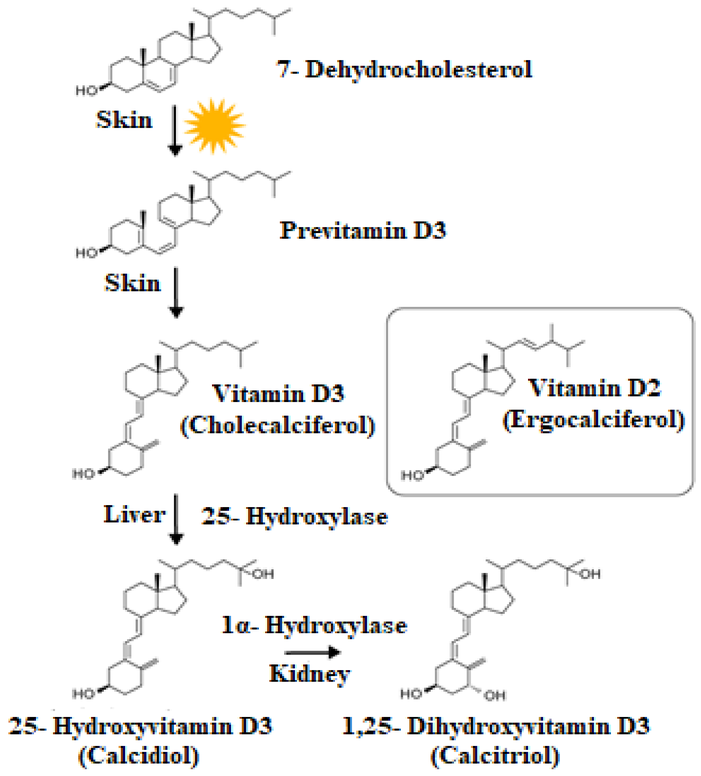

Figure 1. Estructures and metabolism of vitamin D

4. Regulation of metabolism

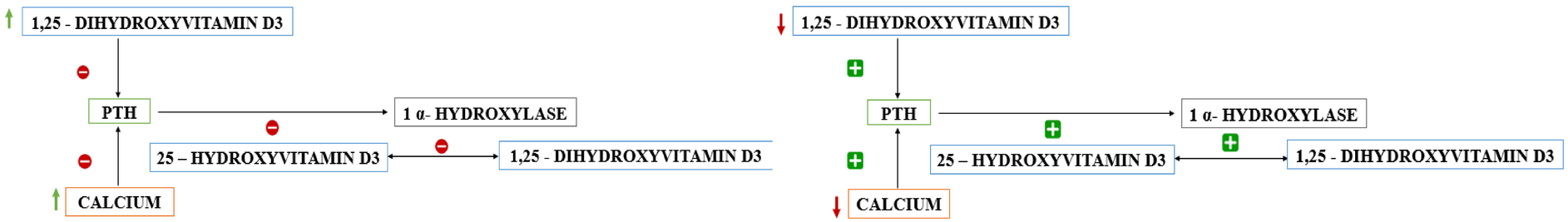

Figure 2. Metabolism regulation of the 1,25-dihudroxyvitamin D3.

5. Physiological actions

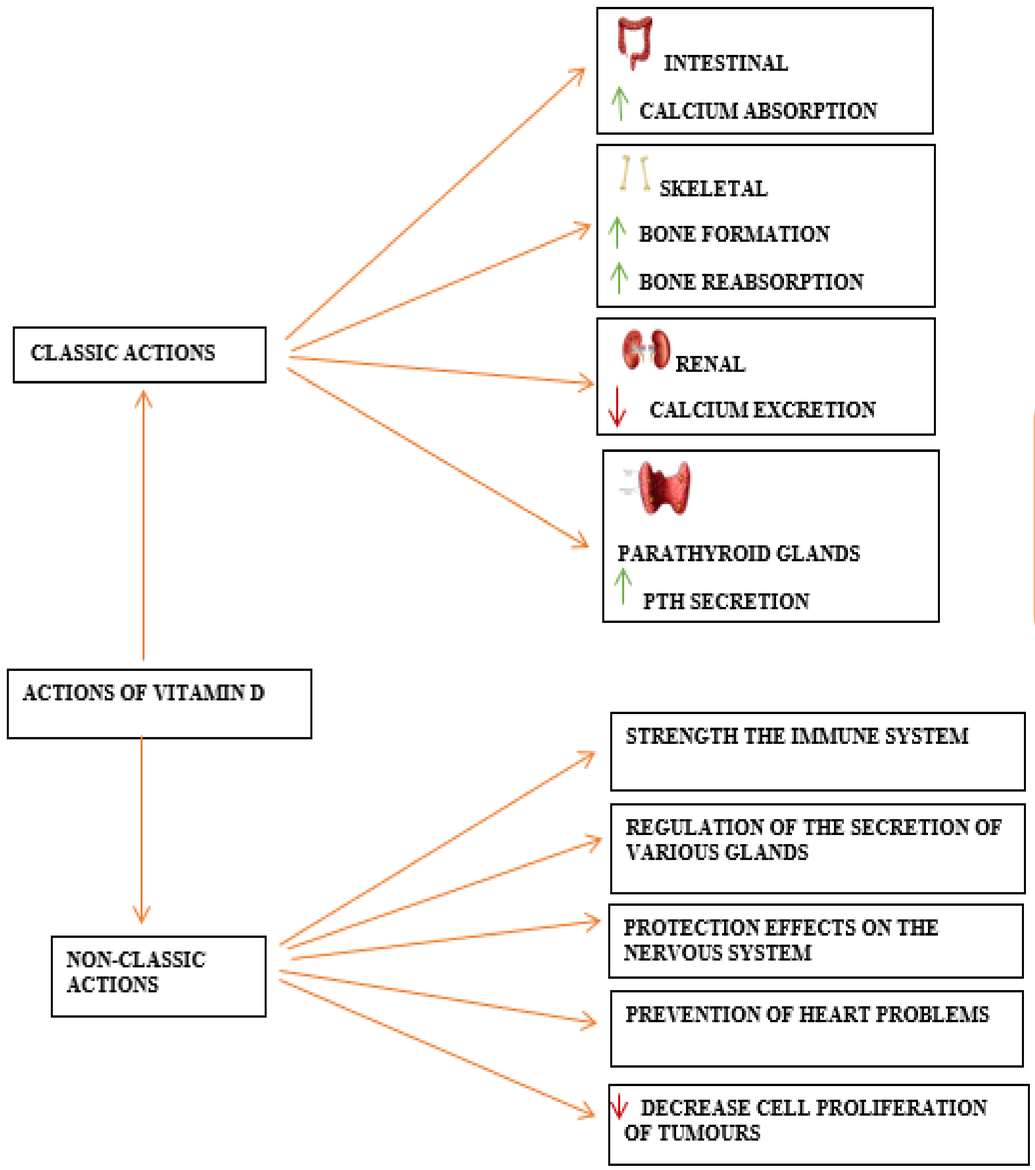

Figure 3. Summary of physiological actions.

6. Levels of vitamin D

Table 1. Vitamin D concentrations (plasma calcidiol levels).

Severe deficiency	**< 10 ng /ml**
Deficiency	**< 20 ng /ml**
Insufficiency	**20-29 ng /ml**
Optimal levels	**≥ 30 ng /ml**
Toxicity	**>150 ng/ml**

7. Some causes of vitamin D deficiency

- Low sun exposure
- A lot of pigmentation on the skin
- Sunscreens
- Genetic factors
- Low vitamin D intake
- Obesity
- Aging

8. Conclusions

- Vitamin D can be obtained from solar radiation or by ingesting it.
- It is important to have adequate vitamin D levels.
- In Spain there is a deficiency of vitamin D.
- It is likely considered that there is a relationship between vitamin D levels and a better clinical picture of people who have become infected with SARS-CoV-2.
- Food industry produces fortified products with vitamin D. Example : Vitalinea, Actimel, cereals...

9. References

Martinez-Augustin, O., Sánchez F. i Suárez M. (2010). Vitamina D. En *Bases fisiológicas y bioquímicas de la nutrición* ("Tratado de Nutrición" tomo I), 2ª edició. Editor: Sánchez de Medina F. Editorial Panamericana.