



smart well-being modulations

PHYSIOLOGICAL MODULATORS

LITERATURE CITED

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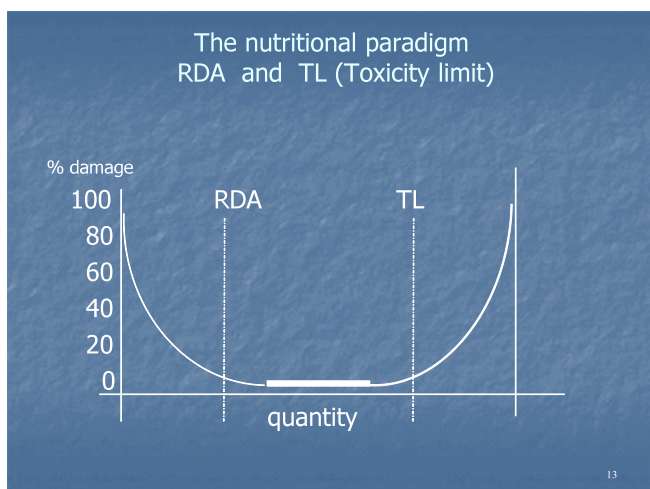
Physiological Modulators (PMs) are natural products (physiological) belonging to a variety of chemical entities with the characteristics to regulate biological processes (modulators).

The concept was first conceived by JA Olson in 1996 and reported at the Congress of the USA National Society of Nutrition entitled "The pro-oxidant action of antioxidants" [J Nutr 1996;126:1208S-1212S], and further developed and studied by U Cornelli since 1997 [Modulatori Fisiologici 2010 Ed MediService Cava Manara (PV)-Italy].

One of the most important concepts of physiological modulation is the nutritional paradigm (see Figure below). The essential elements have to be taken in appropriate quantities; in case of extremely low intake symptoms appear indicating a damage and the same happens in case of extremely high intake, although with different symptoms.

The range of the dosage intake should be between the Recommended Daily Allowances (RDA) and the Toxicity Limit (TL).

Both variables are available for most of the essential elements and were experimentally determined.



The same concept can be applied to every natural compound that can be used as food or food supplement (or for those products called nutraceuticals) that up to a given quantity can be beneficial, but in case they are taken in excessive dose they can be detrimental.

Antioxidants can be considered as prototypes of PMs, because the excessive intake in the believe that "what is good and natural cannot hurt" generates diseases or precipitate chronic diseases. It is a known concept that every antioxidant can be a pro-oxidant in relation to its dosage.

There are examples in the literature about the beta-carotene (CARET study) where high dosages

showed to increase the risk ratio (RR) for lung cancer, or in relation to Selenim (Se) intake causing selenosis, or simply for Sodium (Na) intake causing hypertension.

The same can happen for other natural products of common use, such as fish oil or phytosterols that need to be taken in appropriate amounts determined through clinical trials aimed to proof the concept in specific diseases (evidence-based medicine).

Parallel to the nutritional paradigm is the concept to achieve a given effect by a combination of PMs, in order to obtain a synergism or a sum of effects. This system will avoid to increase the dosage of a given PM up to the TL.

The last important variable of PMs is the specificity of the effect. The concept of modulation belongs to a given apparatus of the body. A brain disease due to oxidative stress (OS) is not the same of a gastrointestinal disease, or a vessels damage caused by OS.

This implies that for every disease a proper combination of PMs will be necessary to optimize clinical outcomes.

To summarize, the concept PMs can be considered "the right products, given at the right dosage for any specific disease."