

## Commentary on the Practice of Medicine (2): Finding A Pearl Inside an Oyster

Isabela Machado Barbosa Stoop\*

\*Rodovia José Carlos Daux 5500 Torre Campeche A. Sala 204. Saco Grande, Florianópolis, Brazil.

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### HEALTH OPTIMIZATION: A PRACTICAL APPROACH FOR HEALTH MAINTENANCE

When I wrote the first article of this series about the practice of medicine, it was really an impulse, a creative moment inspired by the listening of a song. True that I was feeling affronted about some accusations against me. But, like an oyster that makes a pearl to defend itself against an irritant "something" such as a parasite, I will also make a pearl out of the upsetting situations I found myself in and grab the opportunity to write about what I do as a clinical nutrition practitioner. The whole idea of my work is focused on health maintenance which is obtained through a continuous process of health optimization. You start by analyzing the patient preferably when he is still healthy and active in his twenties or thirties. We make a thorough nutritional, metabolic and hormonal evaluation to start with. At this point, it is expected that most of his/her laboratory parameters which reflect molecular damage accumulation - related to biochemical processes such as inflammation, oxidation, glycation, acidification and sub-methylation - will be "normal", that is, within the parameters set by the laboratory, but, actually, it is not enough to be "normal": they've got to be "optimal". That's the view of a health optimization program, if you allow me to call it that way.

### IS IT A COMPLEX NUTRITIONAL, METABOLIC AND HORMONAL EVALUATION?

Not really. I usually order very common tests. Ferritin, us-CRP, fibrinogen, glycated hemoglobin, homocysteine, folic acid, vitamin B12, zinc, copper, manganese, selenium, vitamin A, vitamin C, vitamin E, serum cortisol, S-DHEA, testosterone and IGF-1 are among the tests included in this initial evaluation. In a context of health maintenance, they cannot be considered "unnecessary tests" because, even if they are at the "normal" range, they will give us some ground to maintain this level as optimal as possible along the patients' lives. However, even if the patient is young, we might find many results which can be improved through life style, diet and/or supplements.

### SO, WHAT'S UP THIS TIME?

Again, I was accused of violating the article 14 of the Brazilian Code of Medical Ethics, the same I mentioned in the first article of this series. Art. 14. Practicing or indicating medical acts that are unnecessary or prohibited by the legislation in force in the country. Now the problem was the prescription of selenium - which was considered unnecessary - in the same formula for optimization of thyroid hormones. But isn't selenium a prerequisite to prevent thyroid diseases and preserve overall health? A comprehensive invited revision on selenium - Selenium in human health and disease - was published in 2011 by Antioxidant & Redox Signaling (ARS), a leading peer-reviewed journal dedicated to understanding the vital impact of oxygen and oxidation-reduction (redox) processes on human health and disease [1,2]. There are surprisingly 435 references in this article what makes us feel that they have covered all the issues about the mineral. It is an essential nutrient, identified as such in the mid-1950s [1].

Of particular relevance is the direct involvement of selenoenzymes, the iodothyronine deiodinases (DIOs), in thyroid hormone metabolism [1]. While some T4 deiodination occurs in the thyroid gland, it has been estimated that around 80% of circulating T3 is generated through DIO activity in the peripheral tissues [1,3]. A wealth of evidence supports the view that the relative levels of expression of the different deiodinases in specific tissues and at specific developmental stages or in response to challenges such as tissue injury, illness, and nutritional deficiency is balanced to promote appropriate control of cell proliferation

**Corresponding author:** Isabela Machado Barbosa Stoop, Rodovia José Carlos Daux 5500 Torre Campeche A. Sala 204. Saco Grande, Florianópolis, Brazil, Tel: 48 996343026; E-mail: dra.isabelastoop@gmail.com

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and/or differentiation through control of thyroid hormone activation and inactivation [1]. For example, compensatory increases in tissue DIO2 activity observed in iodine deficiency or hypothyroidism increased local T3 production [1,3]. Adequate selenium nutrition may thus be particularly important in cases of hypothyroidism to facilitate increased deiodinase activity in tissues [1,4].

I believe this text was very clarifying about the role of selenium in thyroid hormone metabolism. Nevertheless, the arguments against me were: 1) the prescription of selenium, and also the other components of the thyroid formula, is not based on a "consensus" - and it was cited "Practical clinical guidelines for the management of hypothyroidism (2013)", although I never said the formula was to treat hypothyroidism. Also, it was not found anything about the issue in Harrison's Textbook of Medicine (20<sup>a</sup>. Edition); 2) according to a Cochrane systematic review - oddly enough, the reference was not provided - there is *no* evidence that selenium supplementation may have any effect on the thyroid function, as much as iodine, zinc and all the other components of the formula for optimization of thyroid hormones.

#### **IN MY OWN DEFENSE: AGAINST A "COOKBOOK" MEDICINE**

Firstly, I'd like to emphasize once more that I work with health optimization. I have hardly ever had any patient with frank hypothyroidism that was not already in use of thyroid hormone replacement therapy. The referred formula is prescribed for patients with intermediate levels of TSH - that is, still "normal, but not optimal" - which may improve with some supplementation of nutrients. Tyrosine, iodine, selenium, zinc, and the others components of the formula are included if we consider they can optimize benefits to the patient. I have never had evidence of harm by using this formula. I also investigate the patient's thyroid with a color doppler ultrasound. If some important abnormalities are found, I send the patient to a specialist on thyroid. Secondly, do you expect to find a text on health optimization in some guidelines for the management of hypothyroidism? I would not consider it likely. Even less on Harrison's Textbook of Medicine. Thirdly, as I said before, I make an evaluation of the patient's status of nutrients - such as selenium, zinc, vitamin B12 and vitamin A - before including them in the thyroid formula. As far as selenium is concerned, there is a relatively narrow margin between selenium intake that results in deficiency or toxicity [1]. According to my experience, quite often we find high levels of selenium in the plasma of patients, one of the most commonly used biomarkers of selenium status [6]. Here, where I live, the levels of selenium in the plasma have a clear correlation with the ingestion of Brazil nuts, by far the most important source of selenium in our diet, although bread and cereals, meat, fish, eggs, and dairy products also contain good amounts of the mineral [1]. So, selenium may not be needed

to be prescribed at all. But If I do include selenium in the formula, I usually prescribe organic selenium 50 to 200 mcg (Se), based on my knowledge and experience, depending on: (a) the patient's initial test results; (b) on his/her diet or willingness to change it; and (c) on occupational exposure risk (e.g., metal recovery and paint production). In other words, I do not prescribe selenium "randomly", if you know what I mean. Last, but not least, as far as I know, we, medical doctors, are not supposed to prescribe only active components which have level of evidence A, or B, or C, or whatever, or based on some consensus or anything. That's what Evidence-based Medicine (EBM) makes clear to us. An interesting article published in 2011 [7] wrote that EBM is a reference of excellence to guide clinical decisions, the integration of own expertise with others' expertise and patient preferences, a way to improve medical practice and limit the variability and errors created when there is no evidence to identify the gold standard and differentiate among alternatives available". It goes further by saying that "it is not an old hat, a "cookbook" medicine perpetrated by arrogance to serve cost cutters, to suppress clinical freedom, a mandatory, deterministic, totalitarian practice of medicine, a way to control cost and to ignore patient preferences, a limit to personal/humanistic/individual medicine". How brave! Observe that this article was written in 2011, more than ten years ago. Since then, Nutrigenomics - the science that provides a genetic understanding for how common dietary components affect the balance between health and disease by altering the expression and/or structure of our genes - has greatly improved and, for that matter, a more Preventive, Predictive, Personalized and Pro-active Medicine is gradually finding its own way in clinical practice.

#### **A HOLISTIC VIEW ON THE USE OF SUPPLEMENTS**

There's one thing I could have done better: I should have given no name to the formula. Actually, it was the burden of the habit of copying and pasting. As I said before, the formula is not mine. Notwithstanding, essential nutrients, such as selenium, when prescribed in a formula like the one mentioned above, will not be used only for thyroid function. The antioxidant effects of selenium are very well known and it has indeed many effects on health and diseases, such as cardiovascular diseases, cancer, Keshan disease, fertility problems and many inflammatory disorders and immune deficiency conditions [1]. Luckily, I think, I work with health maintenance. I'm actually not very much concerned about illnesses from a diagnostic standpoint, because I interfere in the patient's nutritional status before it gets into the stage of diseases, that is, I do my best "to take good care of his/her health", prescribing, if necessary, mainly amino-acids, essential fatty acids, vitamins and minerals, including selenium. Diet and supplements seem to represent a safe step in this long journey for health maintenance through the years. To be able to make that clear to others makes me feel

I have really found a pearl inside an oyster. With love and glory, by the way.

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