

Gluten and Thyroid Health



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Abstract

Gluten produces gliadin in the digestive system, where gliadin is rather foreign to the human body. The foreignness leads to the initiation of an immune response. The degree of reaction from the body's immune system varies from mild and not noticeable to a full-blown celiac disease. Gliadin (from gluten) causes an immune response from the body. Gliadin looks like transglutaminase, an enzyme specifically abundant in the thyroid. The body's antibodies attack both the gliadin and transglutaminase. The thyroid gland is under attack whenever gliadin is in the blood stream. One obvious therapy is to abstain from grains with gluten, and their products. Easy-to-prepare gluten-free dishes are presented to help the stereotypical busy, city-professional eat a gluten-free diet and hence, keep the thyroid healthy. Methods for maintaining a healthy thyroid are also outlined. Categories of foods for a healing diet for the thyroid are provided.

Keywords: Wheat; Rye; Barley; Celiac Disease (CD); Gliadin; Transglutaminase; Hormones; Enzymes

Background

The thyroid gland is an essential gland that controls hormones necessary for metabolism. The thyroid gland takes iodine (in many foods and iodized salt), to manufacture thyroid hormones, and triiodothyronine (T3) and thyroxine (T4). Thyroid cells are the ones which can uniquely absorb iodine within the body. The hypothalamus and the pituitary gland release hormones that control the level of thyroid hormones, T3 and T4, in the blood stream. This system allows the body to maintain a constant level of thyroid hormones in the body. Wheat (gluten) has been implicated in Type 2 Diabetes Mellitus (T2DM) [1-4]. Hence, wheat has already been shown to be not such a good food, though popular. Wheat is commonly found in bread and baked goods, cereals, and pasta of all forms.

Gluten is a hard protein in wheat (and also barley and rye) and the associated grain products, and most individuals are sensitive to its effects, while a minority is intolerant to gluten, causing them to suffer from celiac disease. Celiac Disease (CD) has been noted by the great Greek doctor, Aretaeus the Cappadocian, in the first century Anno Domini (A.D.). In the digestion of gluten in the human body, gliadin is formed. In the body, gliadin appears like transglutaminase, an enzyme required to make chemical bonds throughout the human body [5,6]. While present in many organs, the thyroid possesses a higher concentration of transglutaminase. When gliadins (from the digestion of gluten)

approach the walls of the gut, the guts becomes more porous and allows the big molecules of gliadin to enter. The human body immediately goes to work in raising an immune response. When the immune system attacks gliadin, the antibodies also attack the thyroid [7] since the gliadin is a molecular mimicry of transglutaminase, the enzyme found abundantly in the thyroid. As the immune system responds, the thyroid is under attack/damage for up to 6 months after gluten intake [5].

Non-Gluten Foods

Non-gluten foods may be found in no-short supply in many supermarkets in the cities of the United States of America (USA). One has to be careful to read the packages, to ensure that in addition to the absence of gluten (wheat, rye and barley), there are no synthetic preservatives, colors and added refined sugar. These would be the bare minimum criteria for nutritious foods for the human body in general. Non-gluten foods would include pasta made from buckwheat (Japanese soba noodles), Chinese bean thread noodles, a whole range of rice noodles, and bread made from non-gluten flour, e.g. potato flour, yam flour, etc.

Non-gluten pasta is a healthy replacement of the old-fashion wheat pasta. One such is rice macaroni (without gluten) which tastes exactly like traditional wheat macaroni. Incidentally, the whole grain wheat pasta contains more gluten per gram (and

more fiber per gram) than the old-fashioned wheat pasta. Because of the increased gluten content, whole grain wheat pasta should be avoided, as should regular wheat pasta. In (Figure 1) is shown the tube-shaped macaroni, which is ideal to carry a thick sauce like (organic) tomato sauce, thickened by beaten eggs (rather than cheese). One could add one's favorite spices and vegetables, e.g. Portobello mushrooms, cilantro. In the selection of canned tomato sauce, be sure that the can is not lined with bisphenol A since this organic compound is carcinogenic. This recipe is presented because it is similar to 'mac and cheese', which is a favorite of schoolchildren in the USA. 'Mac and cheese' is not exactly healthy because cheese is typically 70% fat, so that this rice macaroni dish could be a healthier replacement (Figure 1).



Another dish which is vegetarian, using Chinese style rice stick noodles, is shown in (Figure 2). This dish, like the previous, does not contain any gluten or animal muscle meat, and hence, no animal hormones, etc. Cabbage is a very nutritious vegetable with innumerable antioxidants. Phytonutrients in cabbage include sulforaphane and other glucosinolates which arouse the production of detoxifying enzymes if appropriate during digestion [8]. Studies suggest that cruciferous vegetables,

including cabbage, could help protect against colon cancer [9]. Cayenne pepper is a spice with a large number of phytonutrients. The cabbage, rice stick noodles in cayenne sauce, and egg are stir-fried together in a pan. The stir-frying is done below 250oF so that no cancer-causing compounds are formed. Olive oil is used so as not to introduce hexanes into the dish, which other (non-cold pressed oils) vegetable oils would. This dish is selected because of its simplicity of preparation, the few ingredients required, and containing large amounts of phytonutrients and an egg. The egg is considered a perfect protein, as per the World Health Organization (WHO) (Figure 2).

Ways to Maintain a Healthy Thyroid

That iodine is essential for a healthy thyroid is well known. Iodized salt is readily available in supermarkets everywhere. The current threat in 2017, is the rise of popularity of sea salt. Sea salt does not contain iodine, and one has to be very aware of that deficiency. Having a maternal grandmother who suffered from goiter, it is imprinted in the author's mind about the really negative effects, psychological and physical, associated with that disease. One of the steps to thyroid health [10] is to reduce excessive stress, especially emotional stress. A quick method is deep breathing exercises (at the moment the serious stress is caused), and also daily exercises in meditation. Regular exercises and meditation will also lead to daily restful sleep. Adequate sleep of good quality is essential for controlling stress of one's daily living.

The second step is to reduce toxins from entering one's body. The statistic is that the average adult in the United States of America (USA) uses 9 personal-care products, with the top 25% users depending on 15 personal care products [10]. The step here is not to use any personal care products that contain toxins. The alternative is to use homemade personal care products without toxins. Myers [10] makes a tooth-paste from coconut oil, baking soda and an essential oil (e.g. lavender, frankincense). In this category, one is to avoid commercial cleaning agents with toxins. Here to, Myers [10] makes the following suggestion for a universal household cleaning agent: clean water, castile soap and an essential oil (e.g. lavender, lemon). The next step is to repair one's leaky gut, if one is suffering from this ailment. Leaky gut can be caused by gluten, and certainly can be aggravated with continued consumption of gluten. Avoiding gluten will improve one's gut. Healing foods for the thyroid would help maintain a healthy gland. Healing thyroid foods include pasture-raised chicken, organically raised red meat, wild-caught salmon and fishes of all kinds, colorful vegetables and fruits, sea vegetables. The axiom 'You are what you eat' is appropriately re-phrased as 'You are what you digest and absorb', with regards the ways listed here to maintain a healthy thyroid.

Discussion and Conclusion

Wheat has been implicated in T2DM, obesity and other diseases. The current work reviews the work which concluded

that the gliadin (from gluten) activates the body's immune system. The molecular mimicry of gliadin as transglutaminase, an enzyme found all over the body, and especially in the thyroid, causes both to be attacked by the immune system. The body can take up to 6 months to rid itself of the influence of gliadin. In other words, the thyroid gland is under attack for up to a half a year each time one consumes gluten-containing foods. Non-gluten foods are discussed, with a couple of innovative recipes which might gain popularity with the populace. Lastly, several ways to maintain a healthy thyroid are discussed. These include minimizing stress, removing toxins from one's environment, and eating foods which are healing for the thyroid and avoiding foods which are not. Regular exercise and good nightly sleep are complements to a healthy nutritious diet for a healthy thyroid. The proper balance of thyroid hormones within the body contributes to a healthy body.

Acknowledgment

This paper is dedicated to all the peoples in the world who do not feel a hundred percent well, because of their unawareness of the negatives of consuming gluten, and possibly an unhealthy thyroid.

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