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Review Article

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Soy as Goitrogen Foods

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Abstract

Soy product is a common meat substitute among vegetarians. However, soy has its drawbacks. One of the dark sides of soy is that it is a goitrogen. The contents inside soy is not good for thyroid. In fact, American people totally do not know how to eat. The soy in vegan diet are hard to digest, but they think it is healthy; the European gourmet cheese that bugs flying out from are considered not sanitary enough; fermented soy are not considered everyday food on American dinner table. In this review, this author will discuss how to eat soy to benefit thyroid health.

Keywords: Soy, Goitrogen, Fermentation, Natto, Tempeh

Introduction

Soy is a major protein source for vegetarian diet. For instance, if a baby is allergic to caw's milk, soy can be a great substitute. Protein is very important for human development, and soy is a good source of protein [1]. People use beans in Mexican foods, tofu in Chinese food, and cans of cooked beans in their salad. Soy is supposed to be a good protein source for people of low income. However, with the reputation of being healthy, soy products do not seem to benefit women of metabolism syndrome [2]. On the other hand, Asian people, typically Japanese, who consume a lot of soy, have low body weights [3]. In this paper, this researcher will try to find out whether soy is a healthy protein source, and whether there are different ways in eating soy.

Method

The method of this research will be a literature review. One of the purposes of literature review is a synthesis of what is already known [4]. The goal of this paper is to answer questions through analyzing previous documents. There will be two research questions:

1. Is soy a good protein source for weight control?
2. If it is soy products that make Japanese people lean, how do Japanese consume soy differently?

Result and Discussion

Soy contains phytoestrogens, and phytates, which are both goitrogens [5]. Phytoestrogens have similar structures as human estrogens [6]. One type of phytoestrogen is isoflavone. Some studies show that isoflavone lowers the rates of certain cancers [6]. Phytates affects absorption of some nutrients [5].

Injecting soy isoflavone subcutaneously to orchidectomized middle-aged (16-month-old) rats causes thyroid angio-follicular changes, reduces thyroid hormone concentration, and increases thyrotropin (TSH) concentration in serum. All these indicate decreased thyroid function [7]. In human subjects, soy isoflavone caused moderate thyroid hormone decrease, which is consistent with animal experiments [8]. Soy contains phytates, which are compounds that control premature germination and store phosphorous in preparation for sprouting. Phytates affect digestive system by interrupting absorption of micro-nutrients [5]. To understand how phytates affect digestion, Kahindi, et al, measured amino acids and calcium and phosphate digestion under three different levels of phytates among pigs. The result showed that phytates interrupt with the absorption of calcium and phosphate, which are essential minerals for human body. One of the solutions is to take in fermented soybeans. Good examples are Natto, tempeh, miso, and soy sauce [9].

Fermentation breaks down phytic acids and some digestive enzymes inhibitors and makes it easy to digest in human body [9]. Natto is a traditional breakfast food in Japan. It smells a like ammonium and has a cheesy look. American people usually cannot accept it because of the taste and smell [10]. Tempeh is a type of fermented soy originally from Java Indonesia; some tempeh has only soy as an ingredient; while others mix into grains [11]. Tempeh has a bland taste with a little nutty flavor and is not good for eating alone without proper seasonings. There are many ways in cooking tempeh. One of the ways is to season tempeh with tamaris and make into Kong Pao Tempeh [12].

Conclusion

For research, question number one: Is soy a good protein source for weight control? The answer is that it depends on what type of soy people consume. Question number two: If it is soy products that make Japanese people lean, how do Japanese consume soy differently? The answer is fermented soy. Eating soy can be healthy, but the ways to eat soy is crucial in weight control. Soy contains phytates that affect absorption of other nutrients such as calcium and phosphate. Soy also contains isoflavon, which is a goitrogen. To

prevent these problems, people should eat fermented soy. Fermented soy includes natto, tempeh, miso, and soy sauce. Since soy is a type of legume, further research will focus on what type of legume is good for the fermentation; how long should the fermentation go; how to do the fermentation; and the nutrition contents of the post-fermentation products.

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