

The Health Benefits of Hot, Spicy Foods, with the Use of Chili Peppers

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Abstract

The ingestion of red hot chili peppers does cause thermogenesis in humans. Since thermogenesis burns off calories, it is recommended as a possible food for dieting purposes. In addition, red hot chili peppers contain beneficial phytonutrients, the principal one being capsaicin. The hotness scale ranges from zero for Bell peppers to about half a million Scoville units for habanero peppers. The consumption of red hot chili peppers is encouraged to promote cancer prevention and diabetes resistance. The domestic cultivation of hot chili peppers is encouraged, especially for people living in cities and suburban areas.

Keywords: *Bell Peppers; Habanero; Scoville Units; Cancer; Diabetes*

Introduction

Red hot chili peppers are the subject of interest in [1]. Red hot chili peppers is a popular and an essential food ingredient in countries like India, Mexico, some parts of China, Korea, Indonesia, Thailand, Malaysia, Bangladesh and many tropical countries where the chili peppers grow well. Gastronomies like that in Sweden, Norway and Finland, have adopted the hot chili peppers in many of their dishes, even though they have not been traditionally used. The Scoville scale has been adopted to measure the hotness of peppers, with a zero score for bell peppers and over 500,000 score and above for habanero peppers. The highest levels in the Scoville scale, up to above 2 million (at the present time) are occupied by specialty varietals and not easily available in the supermarkets around the United States.



Figure 1: Bell Peppers and Habanero Chili Pepper.

Scoville units are a measure for capsaicin content per unit of mass in the absence of moisture [2-5]. Habanero chilis (of which Scotch bonnets are a varietal) are used in pepper spray, a defense device often carried by people. The concentration of beneficial phytonutrients

is proportional to the concentration of capsaicin in the pepper. The Scoville units of a pepper increase with the concentration of capsaicin. Hence, the concentration of beneficial phytonutrients goes up with the Scoville units of hotness of that pepper. In other words, the habanero chili is more nutritious than the jalapeno, or the Thai chili. In Figure 1, is shown the habanero chili and two Bell peppers, which tastes sweet when they are yellow, orange or red in ripeness.

Literature Survey

Kobayashi, *et al.* [6] discovered that capsaicin suppressed body fat accumulation in laboratory animals. Capsaicin both raised heat loss and heat production, and suppression of one had no effect on the other. They suggest that capsaicin triggers independent networks for heat loss and heat production in mammals. Ohnuki, *et al.* [7] claimed to be the first study about the biological effect of a natural product that hold a significant quantity of non-pungent capsaicin equivalent, and it may be utilized as a therapeutic means for weight control. Cronin [8] delve into the health benefits of capsaicin, the dominant phytonutrient in chili peppers and the main reason for its hotness. These include topical uses, to help manage niggling pain caused by rheumatoid arthritis, osteoarthritis, for instance.

Six main health benefits of capsaicin are presented in [9]. The benefits are substantiated by scientific research studies cited by Dr. Axe. Reference [10] is the study which resulted in the claim that capsaicin can cause the apoptosis of more than one type of prostate cancer cell. Reference [11] resulted in the discovery that capsaicin can cause the apoptosis of breast cancer stem cells. This discovery is particularly noteworthy because these breast cancer stem cells can cause the recurrence of breast cancer, after the other cancer cells have perished. Capsaicin, with piperine (from black pepper), reduced inflammation caused by the bacteria, *H. pylori* (which causes one type of gastritis) and it was deduced to be a helpful method to aid in averting the progression of this disease: gastric cancer [12]. The authors of [13] claim that capsaicin is a phytonutrient which is an anti-cancer agent. Jang, *et al.* claim that capsaicin could reduce the size of some lung tumors [14], and perhaps the incidences.

The work of [15] produced the conclusion that capsaicin can help in the management of blood glucose and insulin in persons suffering from Type 2 Diabetes Mellitus (T2DM); capsaicin can even be used for women with gestational diabetes.

Scoville Scale of Hotness

The Scoville heat units of various types of commonly available chili peppers in the United States are shown in Table 1. The high end of the scale is occupied by the habanero, and the low end by the Bell pepper. It can be seen that a food recipe can be made up of various proportions of habanero and Bell pepper, corresponding to the degree of heat units desired. This statement is made because most people who are used to the typical European diet would probably find the habanero chili too hot or too pungent initially. Since this work is to encourage people to consume a beneficial vegetable/spice, caution is advised to beginning connoisseurs of hot, spicy foods.

Scoville Heat Units	Type of Chili Peppers
350,000 - 580,000	Red Savina habanero
100,000 - 350,000	Habanero chili, Scotch bonnet pepper
50,000 - 100,000	Capsicum Apache, Thai chili
30,000 - 50,000	Cayenne pepper, Tabasco pepper,
10,000 - 30,000	Serrano pepper
3,500 - 10,000	Jalapeno, wax pepper (e.g. Hungarian)
1,000 - 3,500	Poblano (or ancho)
100 - 1,000	Banana pepper, Cubanelle, Pimento, Paprika
0	Bell pepper

Table 1: Scoville Units of Some Common Peppers [16].

Associated with this hotness scale, it should be noted that green chili peppers tend to be less hot than the chilis at the red (or orange) state of ripeness. Nutritionally speaking, the green form of the pepper is the least nutritious state. In addition, the seeds and membranes holding the seeds contain the greatest proportion of hotness of the chili pepper. In other words, the seeds and membranes should not be removed from the recipe if maximum nutrition is to be benefitted from the chili peppers.

Home Bottling of Hot Sauce

This section will discuss the manufacture of one's hot sauce at home, which will be fresher than anything one can buy. In Figure 2 is shown a bowl brimming over with ripe habaneros. The ingredients required are a dozen habanero chili peppers (or equivalent favorite chili pepper), a quarter cup of white vinegar, half table-spoonful of salt, and a 4 oz. (125 ml) jar with lid. First, sterilize the jar in a large pot of boiling water for 15 minutes. Add the vinegar and salt to the peppers in a food processor and puree. Process till the chunkiness preferred. Transfer to the sterilized jar, close the lid, cool at room temperature, and then store in refrigerator and use for up to a month.



Figure 2: Ripe Habanero Chili Peppers.

For those who are shy of the extreme hotness of habaneros, the seeds and membranes of the chili fruit may be removed first. This, of course, requires the habaneros to be cut and processed first; gloves are highly recommended since the hotness does affect the skin of the fingers.

Discussion and Conclusion

The hot chili pepper is being promoted as a healthful food, not just as food for persons who want to lose weight [1]. In the United States, from California through New Mexico, Texas, Louisiana to Florida (in the South), people are encouraged to grow a chili pepper plant in their homes, either on the ground or in a pot. Since the chili pepper plant is in general a fast growing one, people in the temperate areas are also encouraged to cultivate the plant in spring and summer, just as one would cultivate a herb like cilantro or coriander. For many people in the world (countries mentioned above), and even in the United States, the hot flavor of red hot chili peppers is loved and consumed very often. This tasty fact should be used to popularize chili peppers as a daily condiment because they are nutritious and healthful.

References [17-20] are works which endeavor to guide the average person around the world on the right, nutritious diets for health. There are more than a few ways to follow a healthful, nutritious daily diet (even in a relatively homogeneous culture like Norway). The beneficial fact of using hot chili peppers is that all the different varieties contain capsaicin which can boost a body's immune system and help protect the body against diseases such as Type 2 Diabetes Mellitus (T2DM) and various cancers.

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