

## Hibiscus Tea for Hypertension



*Hibiscus sabdariffa*

Hypertension is one of the most prevalent and important health problems facing society today. Blood pressure is the force that a person's blood exerts against the walls of their blood vessels. This pressure depends on the resistance of the blood vessels and how hard the heart must work. In 90% of cases the etiology (cause) of hypertension is unknown. This is called 'essential hypertension'. High blood pressure typically does not cause symptoms. Long-term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, atrial fibrillation, peripheral arterial disease, vision loss, chronic kidney disease, and even dementia.

If left untreated hypertension is a progressive and potentially fatal disease. Non-pharmacological treatments such as diet, exercise, relaxation (meditation) and yoga are effective for controlling mild hypertension. In this article hibiscus tea will be discussed as an aid in controlling hypertension without side effects.

In conventional medicine high blood pressure is treated with diuretics, adrenergic receptor blockers, calcium channel blockers and angiotensin converting enzyme inhibitors. Of course, these pharmaceutical agents carry side effects as they dysregulate numerous enzyme systems. Side effects include vertigo, fatigue, depression, congestive heart failure, hallucinations, tachycardia, angina, hypokalemia, gastrointestinal disturbances and leukopenia. Generally, side effects occur more in older patients than in younger patients.



### Dried Hibiscus Flowers

Many mechanisms have been proposed to account for the rise in peripheral resistance in hypertension. Evidence implicates disturbances in the kidneys' electrolyte and water management as a potential cause. In other words, dehydration and deficiencies in magnesium and potassium can potentiate hypertension.

Bioregulatory approaches for the treatment of mild to moderate hypertension involve sufficient hydration, supplements with electrolytes (magnesium and potassium), decreased sugar/processed carbohydrates and excess salt, and regular exercise and meditation. Most people benefit from exercise at least 5 days of the week. Examples of suitable activities are walking, cycling, swimming, yoga and Pilates. Smoking can also raise blood pressure. Avoiding or quitting smoking reduces the risk of hypertension, serious heart conditions, and other health issues.

There are numerous herbs and herbal formulations that also assist with regulation of circulation and balance of blood pressure. One herb proven to reduce hypertension is *Hibiscus sabdariffa* L. Hibiscus has a long history of medicinal use. The vibrant flower is used in cultures all over the world to treat a variety of ailments and illnesses. The most common species of hibiscus used in medicine is *Hibiscus sabdariffa*, also known as Roselle.

Hibiscus is widely grown in Central and West Africa, South East Asia, and elsewhere throughout the globe. Drinking a tea made from the plant is the most common way to use hibiscus medicinally. The thick, red and fleshy, cup-shaped calyces of the flower are consumed worldwide as a cold beverage and as a hot drink. The tea is made from drying many different parts of the plant, but mostly the flower itself. Once the dried parts are steeped, the tea turns a rich ruby red color. The drink itself is quite sour, with a taste like cranberries.

Hibiscus tea has been used traditionally for many conditions, particularly high blood pressure, liver disorders, high cholesterol and infections.<sup>1, 2, 3, 4, 5</sup> Research demonstrates that the hot (or cold) Hibiscus beverage is full of vitamin C and antioxidants, so it is a great way to prevent colds during the winter months.<sup>6, 7, 8, 9, 10, 11</sup>

A 2010 study published in the Journal of Nutrition found that consuming hibiscus tea lowered blood pressure in people at risk of high blood pressure and those with mildly high blood pressure.<sup>12</sup> Study participants consumed three 8-ounce servings of hibiscus tea or a placebo beverage daily for 6 weeks. Those who drank the hibiscus tea saw a significant reduction in their systolic blood pressure, compared to those who consumed the placebo drink. The researchers concluded, “These results suggest daily consumption of hibiscus tea, in an amount readily incorporated into the diet, lowers BP in pre- and mildly hypertensive adults and may prove an effective component of the dietary changes recommended for people with these conditions.”

Numerous other studies have also demonstrated the anti-hypertensive effects of *Hibiscus sabdariffa* L. in both humans and experimental animals. Recent pharmacological studies have shown that *Hibiscus sabdariffa* extracts significantly reduced blood pressure in humans<sup>13, 14, 15, 16, 17, 18</sup> and in experimental animals<sup>19, 20, 21, 22</sup>. However, the exact mechanisms responsible for these effects of *Hibiscus sabdariffa* are not fully understood.

### **Safety and Toxicology**

From animal studies it has been shown that *Hibiscus sabdariffa* is a very safe plant to consume. Its extracts are characterized by a very low degree of toxicity.<sup>23, 24, 25</sup>

### **Making Hibiscus Tea**

Desired Ingredients:

- 2 cups fresh organic Hibiscus Flowers (or 1/2 cup dried organic Hibiscus Flowers)
- 8 cups spring water
- (optional) 1/8 cup raw honey (add more if you like your tea sweeter)
- (optional) 3 tablespoons fresh lime juice

Bring the hibiscus flowers and water to a boil in a large pot. Once the water starts boiling, switch off the flame and cover the vessel. At this point, you can also add other herbs if desired, such as lemon grass or lemon balm. Let the tea steep for 15-20 minutes. Mix in the honey and lime juice till completely combined. Strain the tea. Serve hot or cold.

## Dosage

Generally, it is not necessary to exceed a quart a day of hibiscus tea for adults and a half-quart for a 75-pound child.

## References

1. Ross, Ivan A. "Hibiscus sabdariffa." In *Medicinal plants of the world*, pp. 267-275. Humana Press, Totowa, NJ, 2003.
2. Wang, Chau-Jong, Jin-Ming Wang, Wea-Lung Lin, Chia-Yih Chu, Fen-Pi Chou, and Tsui-Hwa Tseng. "Protective effect of Hibiscus anthocyanins against tert-butyl hydroperoxide-induced hepatic toxicity in rats." *Food and chemical toxicology* 38, no. 5 (2000): 411-416.
3. Liu, Jer-Yuh, Chang-Che Chen, Wen-Hong Wang, Jeng-Dong Hsu, Mon-Yuan Yang, and Chau-Jong Wang. "The protective effects of Hibiscus sabdariffa extract on CCl<sub>4</sub>-induced liver fibrosis in rats." *Food and Chemical Toxicology* 44, no. 3 (2006): 336-343.
4. Lin, Tzu-Li, Hui-Hsuan Lin, Chang-Che Chen, Ming-Cheng Lin, Ming-Chih Chou, and Chau-Jong Wang. "Hibiscus sabdariffa extract reduces serum cholesterol in men and women." *Nutrition research* 27, no. 3 (2007): 140-145.
5. El-Saadany, S. S., M. Z. Sitohy, S. M. Labib, and R. A. El-Massry. "Biochemical dynamics and hypocholesterolemic action of Hibiscus sabdariffa (Karkade)." *Food/Nahrung* 35, no. 6 (1991): 567-576.
6. Tsai, Pi-Jen, John McIntosh, Philip Pearce, Blake Camden, and Brian R. Jordan. "Anthocyanin and antioxidant capacity in Roselle (Hibiscus sabdariffa L.) extract." *Food research international* 35, no. 4 (2002): 351-356.
7. Zhen, Jing, Thomas S. Villani, Yue Guo, Yadong Qi, Kit Chin, Min-Hsiung Pan, Chi-Tang Ho, James E. Simon, and Qingli Wu. "Phytochemistry, antioxidant capacity, total phenolic content and anti-inflammatory activity of Hibiscus sabdariffa leaves." *Food chemistry* 190 (2016): 673-680.
8. Sáyago-Ayerdi, Sonia G., Sara Arranz, José Serrano, and Isabel Goñi. "Dietary fiber content and associated antioxidant compounds in roselle flower (Hibiscus sabdariffa L.) beverage." *J. of Agricultural and Food Chemistry* 55, no. 19 (2007): 7886-7890.
9. Tee, Pau-Ling, Salmah Yusof, and Suhaila Mohamed. "Antioxidative properties of roselle (Hibiscus sabdariffa L.) in linoleic acid model system." *Nutrition & Food Science* (2002).
10. Tseng, T-H., E-S. Kao, C-Y. Chu, F-P. Chou, H-W. Lin Wu, and C-J. Wang. "Protective effects of dried flower extracts of Hibiscus sabdariffa L. against oxidative stress in rat primary hepatocytes." *Food and Chemical Toxicology* 35, no. 12 (1997): 1159-1164.
11. Tseng, T-H., E-S. Kao, C-Y. Chu, F-P. Chou, H-W. Lin Wu, and C-J. Wang. "Protective effects of dried flower extracts of Hibiscus sabdariffa L. against oxidative stress in rat primary hepatocytes." *Food and Chemical Toxicology* 35, no. 12 (1997): 1159-1164.
12. McKay, Diane L., CY Oliver Chen, Edward Saltzman, and Jeffrey B. Blumberg. "Hibiscus sabdariffa L. tea (tisane) lowers blood pressure in prehypertensive and mildly hypertensive adults." *The Journal of nutrition* 140, no. 2 (2010): 298-303.

13. Ajay, Machha, H. J. Chai, A. M. Mustafa, Anwar Hassan Gilani, and Mohd Rais Mustafa. "Mechanisms of the anti-hypertensive effect of Hibiscus sabdariffa L. calyces." *Journal of ethnopharmacology* 109, no. 3 (2007): 388-393.
14. Faraji, M. Haji, and AH Haji Tarkhani. "The effect of sour tea (Hibiscus sabdariffa) on essential hypertension." *Journal of Ethnopharmacology* 65, no. 3 (1999): 231-236.
15. Herrera-Arellano, Armando, Judith Miranda-Sánchez, Pedro Ávila-Castro, Sara Herrera-Álvarez, Jesús Enrique Jiménez-Ferrer, Alejandro Zamilpa, Rubén Román-Ramos, Héctor Ponce-Monter, and Jaime Tortoriello. "Clinical effects produced by a standardized herbal medicinal product of Hibiscus sabdariffa on patients with hypertension. A randomized, double-blind, lisinopril-controlled clinical trial." *Planta medica* 73, no. 01 (2007): 6-12.
16. Mozaffari-Khosravi, H., B. A. Jalali-Khanabadi, M. Afkhami-Ardekani, F. Fatehi, and M. Noori-Shadkam. "The effects of sour tea (Hibiscus sabdariffa) on hypertension in patients with type II diabetes." *Journal of human hypertension* 23, no. 1 (2009): 48-54.
17. Herrera-Arellano, A., Flores-Romero, S., Chavez-Soto, M.A., Tortoriello, J., 2004. Effectiveness and tolerability of a standardized extract from Hibiscus sabdariffa in patients with mild to moderate hypertension: a controlled and randomized clinical trial. *Phytomedicine* 11, 375–382
18. Ali, M. B., W. M. Salih, A. H. Mohamed, and A. M. Homeida. "Investigation of the antispasmodic potential of Hibiscus sabdariffa calyces." *Journal of ethnopharmacology* 31, no. 2 (1991): 249-257.
19. Adegunloye, B.J., Omoniyi, J.O., Owolabi, O.A., Ajagbona, O.P., Sofola, O.A., Coker, H.A., 1996. Mechanisms of blood pressure lowering effects of the calyx extract of Hibiscus sabdariffa in rats. *African Journal of Medicine and Medical Sciences* 25, 235–238.
20. Onyenekwe, P.C., Ajani, E.O., Ameh, D.A., Gamaniel, K.S., 1999. Antihypertensive effect of roselle (Hibiscus sabdariffa) calyx infusion in spontaneously hypertensive rats and a comparison of its toxicity with that in Wistar rats. *Cell Biochemistry and Function* 17, 199–206
21. Odigie, I. P., R. R. Ettarh, and S. A. Adigun. "Chronic administration of aqueous extract of Hibiscus sabdariffa attenuates hypertension and reverses cardiac hypertrophy in 2K-1C hypertensive rats." *Journal of ethnopharmacology* 86, no. 2-3 (2003): 181-185.
22. Chen, Chang-Che, Jeng-Dong Hsu, San-Fa Wang, Huei-Ching Chiang, Mon-Yuan Yang, Erl-Shyh Kao, Yung-Chyan Ho, and Chau-Jong Wang. "Hibiscus sabdariffa extract inhibits the development of atherosclerosis in cholesterol-fed rabbits." *Journal of agricultural and food chemistry* 51, no. 18 (2003): 5472-5477.
23. Ali, Badreldin H., Naser Al Wabel, and Gerald Blunden. "Phytochemical, pharmacological and toxicological aspects of Hibiscus sabdariffa L.: a review." *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives* 19, no. 5 (2005): 369-375.
24. Akindahunsi, A. A., and M. T. Olaleye. "Toxicological investigation of aqueous-methanolic extract of the calyces of Hibiscus sabdariffa L." *Journal of ethnopharmacology* 89, no. 1 (2003): 161-164.

25. de Arruda, Aline, Claudia Andrea L. Cardoso, Maria do Carmo Vieira, and Arielle Cristina Arena. "Safety assessment of Hibiscus sabdariffa after maternal exposure on male reproductive parameters in rats." *Drug and chemical toxicology* 39, no. 1 (2016): 22-27.