Hibiscus SAP

*Science-based hibiscus for hypertension**

Hibiscus (*Hibiscus sabdariffa*) is a medicinal botanical that maintains cardiovascular health, based on evidence from several clinical trials.*[1] Hibiscus has a beneficial effect on blood pressure, blood sugar, and cholesterol, and has antioxidant properties.*[1] This botanical has been used historically in both Asia and Africa as an aqueous extract or tea to treat high blood pressure, liver disease, and fevers.*[2] Hibiscus possesses several active constituents, including anthocyanidins which are thought to be the source of its antioxidant effects.*[1]

SUPPLEMENT FACTS

Serving Size: 1 capsule **Servings:** 90

	Amount Per Serving	% Daily Value
Hibiscus sabdariffa flower extract, 15% anthocyanidins	600 mg	**

**Daily Value not established

Other ingredients: Vegetable magnesium stearate, and silicon dioxide in a vegetable capsule composed of vegetable hypromellose and purified water.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavor or color, starch, or sugar.

Hibiscus SAP contains 90 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 1 capsule daily or as directed by your healthcare practitioner.

INDICATION

Hibiscus SAP:

- Assists in maintaining healthy blood pressure levels.*
- Promotes healthy cholesterol levels.*
- Supports healthy blood sugar levels.*

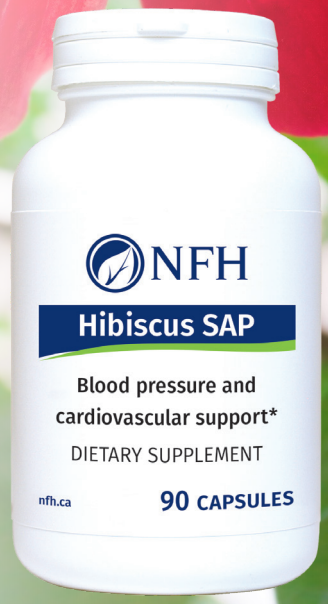
CAUTIONS AND WARNINGS

Consult a healthcare practitioner prior to use if you are pregnant or breast-feeding. Hypersensitivity has been known to occur; in which case, discontinue use.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Hibiscus SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.

*** These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**



Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

NFH®

351, Rue Joseph-Carrier, Vaudreuil-Dorion, Quebec, J7V 5V5
T 1 866 510 3123 • F 1 866 510 3130 • nfh.ca

For healthcare professional use only.

Hibiscus sabdariffa has been studied for its effects on blood pressure, lipid levels, blood-sugar regulation, and metabolic syndrome, as well as its antioxidant properties. Hibiscus contains anthocyanins (derived from anthocyanidins), polyphenols, glycosides, sterols, organic acids, polysaccharides, and some minerals.[3, 4] Hibiscus possesses pharmacological properties as well as a great safety profile that demonstrates that it promises as a treatment in cardiac and diabetic patients.[2]

HYPERTENSION

Hibiscus sabdariffa beverages have been widely used in Mexico as a diuretic for treating concerns such as hypertension, hypercholesterolemia, liver disease, and gastrointestinal disorders.[3] In a clinical trial, researchers isolated the bioactive and characterized the mechanism through which hibiscus exerts its blood pressure–lowering effects.[3] The active constituents anthocyanins delphinidin-3-*O*-sambubioside and cyanidin-3-*O*-sambubioside were isolated by bioassay-guided purification.[3] These compounds were then shown to compete with angiotensin converting enzyme (ACE) for attachment at the active site,[3] suggesting that hibiscus demonstrates its antihypertensive effects via ACE inhibition.[3]

In a randomized, double-blind, placebo-controlled trial, researchers compared *Hibiscus sabdariffa* dried extract containing 250 mg/d of total anthocyanins to 10 mg/d lisinopril in patients with stage I or II hypertension over a 4-week period.[2, 5] The group treated with hibiscus showed a reduction in systolic and diastolic blood pressure by 11.6% and 12.2%, respectively. The group treated with lisinopril manifested decreases in systolic and diastolic blood pressure by 15.8% and 15.7%, respectively. Lisinopril was significantly more effective at blood-pressure lowering than was hibiscus. Researchers demonstrated that patients treated with hibiscus showed decreased plasma ACE activity and reduced serum sodium levels without changing serum potassium levels.[2] The researchers concluded that hibiscus appears to exert its antihypertensive action through ACE inhibition and diuresis.[2, 5]

In another study comparing hibiscus to captopril for hypertension, participants received either 10 g of *Hibiscus sabdariffa* extract (HSE) (10 g of dry calyx prepared in 500 mL water and steeped for 10 minutes providing 9.6 mg/d anthocyanins) or 25 mg captopril bid for 4 weeks.[2, 6] Both groups responded with significant reductions in blood pressure, whereas in the hibiscus group's systolic blood pressure decreased by 10.2% and diastolic decreased by 12.3%. The captopril group had a reduction of 11.4% systolic and 14.3% diastolic, which was not significantly different compared to the hibiscus results.[2, 6]

CHOLESTEROL

Hibiscus sabdariffa extract (HSE) has been shown to lower plasma lipid levels and reduce damage to the liver.[7] Researchers have explored the hypolipidemic effects of a *Hibiscus sabdariffa* polyphenol extract (HPE) in a hamster model.[7] In this surrogate model of human heart disease, 3 groups were fed high-fat diets for 10 weeks: group 1 received no treatment, group 2 received HSE, while group 3 received HPE. Both treatments resulted in reductions in serum triglycerides and total cholesterol levels in a dose-dependent manner.[2, 7] However, the HPE group exhibited a more potent decrease in LDL cholesterol than the crude extract HSE group (2% polyphenols). In addition, the HPE group demonstrated an increase in HDL cholesterol levels in a dose-dependent manner.[7] Mechanistically, HPE decreased the amount of lipid in the hepatocyte by activating AMPK and via the reduction of SREBP-1, which inhibited the expression of fatty acid synthase and HMG-CoA reductase.[7] These researchers also found that HPE enhanced the expression of the LDL receptor, resulting in increased LDL cholesterol uptake and clearance by the liver.[7]

In a clinical trial, a placebo-controlled, double-blind study was carried out in patients with LDL-cholesterol between 130 and 190 mg/dl.[8] Participants were divided into two groups and received either HSE capsules (500 mg bid) or placebo for 90 days. Participants who were overweight were also advised to achieve a 5% weight loss. Both groups realized similar but significant reductions in body weight and serum LDL-cholesterol levels from baseline. LDL cholesterol levels were similarly decreased by 18% in the HSE group and 12% in the placebo group. Serum triglycerides levels were decreased by 10% in the HSE group, but were not significantly impacted by the placebo.

METABOLIC SYNDROME AND GLUCOSE REGULATION

Metabolic syndrome is strongly associated with insulin resistance, hypertension, obesity, and dyslipidemia.[9] Clinically, hibiscus has demonstrated the ability to reduce hypertension and hyperlipidemia, therefore researchers have been interested in investigating preventative effects of hibiscus in individuals with and without metabolic syndrome.[9] Participants were divided into two groups based on having metabolic syndrome or not, and then allocated into one of three treatment groups.[9] Group 1 was given a preventative diet, group 2 was supplemented with HSE capsules (100 mg/d), and group 3 was given both the preventative diet and HSE supplementation for 31 days. In participants with metabolic syndrome, HSE significantly reduced fasting glucose by 8.4%, total cholesterol by 10%, LDL cholesterol by 20%, and increased HDL cholesterol levels by 39%.[2, 9] In participants without metabolic syndrome, HSE also achieved significant reductions in fasting glucose by 6.7% and triglycerides by 23%, and increased HDL cholesterol levels by 10%. Researchers concluded that in addition to the well-documented hypotensive effects, hibiscus can also be used for individuals with metabolic syndrome–associated dyslipidemia.[9]

ANTIOXIDANT EFFECTS

The early stages of atherosclerotic lesions are caused by the oxidation of LDL-cholesterol.[2] CD36 is a scavenger receptor that binds and internalizes oxidized LDL molecules, mediating their uptake by macrophages and the formation of macrophage-derived foam cells.[2] In a recent study investigating the antioxidant activity of anthocyanin-rich hibiscus extracts, researchers found that hibiscus significantly decreased CD36 mRNA gene and protein expression.[2, 10] The study demonstrated that the antioxidant activity of hibiscus may inhibit the formation of oxidized LDL foam cells.[2]

SAFETY

Hibiscus has been used in at least 10 countries worldwide in a variety of forms including decoctions, infusions of calyxes, and as leaves for treating hypertension and hyperlipidemia, with no reported adverse events or side effects.[1] Hibiscus extracts have a low degree of toxicity, with estimated LD_{50} values in humans ranging from 2,000 to over 5,000 mg/kg_{bw}/d. No evidence exists suggesting hepatic or renal toxicity from hibiscus extract consumption; however, very high doses of hibiscus may have possible adverse hepatic effects.[1]

REFERENCES

1. Hopkins, A.L., et al. "*Hisibcus sabdariffa* L. in the treatment of hypertension and hyperlipidemia: A comprehensive review of animal and human studies." *Fitoterapia* Vol. 85 (2013): 84–94.
2. Saunders, L. and P. Rouchotas. "Hibiscus — An emerging new botanical medicine." *IHP Magazine* (2013): 67–71.
3. Ojeda, D., et al. "Inhibition of angiotensin converting enzyme (ACE) activity by the anthocyanins delphinidin-α and cyanidin-3-*O*-sambubiosides from *Hibiscus sabdariffa*." *Journal of Ethnopharmacology* Vol. 127, No. 1 (2010): 7–10.
4. Frank, T., et al. "Pharmacokinetics of anthocyanidin-3-glycosides following consumption of *Hibiscus sabdariffa* L. extract." *Journal of Clinical Pharmacology* Vol. 45, No. 2 (2005): 203–210.
5. Herrera-Arellano, A., et al. "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* Vol. 73, No. 1 (2007): 6–12.
6. Herrera-Arellano, A., et al. "Effectiveness and tolerability of a standardized extract from *Hibiscus sabdariffa* in patients with mild to moderate hypertension: a controlled and randomized clinical trial." *Phytomedicine* Vol. 11, No. 5 (2004): 375–382.
7. Yang, M.Y., et al. "The hypolipidemic effect of *Hibiscus sabdariffa* polyphenols via inhibiting lipogenesis and promoting hepatic lipid clearance." *Journal of Agricultural and Food Chemistry* Vol. 58, No. 2 (2010): 850–859.
8. Kuriyan, R., et al. "An evaluation of the hypolipidemic effect of an extract of *Hibiscus sabdariffa* leaves in hyperlipidemic Indians: a double blind, placebo controlled trial." *BMC Complementary and Alternative Medicine* Vol. 10 (2010): 27–34.
9. Gurrola-Diaz, C.M., et al. "Effects of *Hibiscus sabdariffa* extract powder and prevention treatment (diet) on the lipid profiles of patients with metabolic syndrome (MeSy)." *Phytomedicine* Vol. 17, No. 7 (2010): 500–505.
10. Kao, E.S., et al. "Anthocyanin extracted from *Hibiscus* attenuate oxidized LDL-mediated foam cell formation involving regulation of *CD36* gene." *Chemico-Biological Interactions* Vol. 179, No. 2–3 (2009): 212–218.

For healthcare professional use only.