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File: ■ Hibiscus (*Hibiscus sabdariffa*, Malvaceae)
■ Blood Pressure
■ Hypertension

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RE: Hibiscus Tea Reduces Blood Pressure in Mild Hypertension

Jalalyazdi M, Ramezani J, Izadi-Moud A, Madani-Sani F, Shahlari S, Ghiasi SS. Effect of *Hibiscus sabdariffa* on blood pressure in patients with stage 1 hypertension. *J Adv Pharm Technol Res*. July-September 2019;10(3):107-111. doi: 10.4103/japtr.JAPTR_402_18.

Hypertension is a risk factor for ischemic heart and cerebrovascular disease and chronic kidney disease, among others. Global prevalence is estimated at 31.1% of adults, with higher rates in low- and middle-income countries. In Iran, 26.6% of the population has high blood pressure (BP). In 2017, 45.6% of US adults had high BP; 36.2% were prescribed antihypertensive drugs. Many classes of drugs are used to control BP, but all have drawbacks in cost, availability, efficacy, and/or adverse effects (AEs). In developing nations, insufficient awareness and treatment make managing hypertension a challenge. Traditional herbal medicines and common foods may play a role in BP management. Garlic (*Allium sativum*, Amaryllidaceae) bulb, onion (*A. cepa*) bulb, green and black tea (*Camellia sinensis*, Theaceae) leaves, and hibiscus (*Hibiscus sabdariffa*, Malvaceae) flowers, all used traditionally to control BP, have supporting evidence for this use. Studies also report hibiscus' diuretic, antibacterial, anticancer, antioxidant, nephro- and hepato-protective, anti-cholesterol, and anti-diabetic effects. It contains proteins, fatty acids, carbohydrates, flavonoids (anthocyanins), minerals, and vitamins. There is as yet insufficient evidence of its effects in different medical conditions.

The authors conducted a randomized, placebo-controlled clinical trial (RCT) of hibiscus in patients with mild (stage 1) hypertension at an outpatient cardiology clinic at Imam Reza Hospital (Mashhad, Iran). During the study period (not defined), 46 patients aged 18-70 years with systolic BP (SBP) 130-139 and diastolic BP (DBP) 80-89 mmHg were enrolled. They were divided (neither randomization nor blinding are described) into two groups of 23 each. The active group received nonmedical advice for lowering BP and drank two standard cups/d of hibiscus as an infusion made with bags from a local herb shop, each with 1.25 g hibiscus, for one month. Controls received nonmedical advice only. This included weight loss under a nutritionist's supervision, Dietary Approaches to Stop Hypertension (DASH), less salt and more potassium intake, and aerobic exercise five d/wk for 30 minutes. BP, measured at baseline and after one month, was taken on each occasion three times over 15 minutes and the average used in analysis. Statistical significance was defined as $P<0.05$, with a confidence level of 95%.

Mean age of patients was 49.83±3.38 years; mean body mass index (BMI), 28.74±3.50 kg/m^2, with no significant differences between groups. Among participants, 54.3% were men; the active group, 48.0%; and control, 52.0%, a statistically insignificant difference (P=0.77). There were no significant between-group differences in mean SBP or DBP at baseline (P=0.18; P=0.88, respectively). Presumably, all 46 participants completed the RCT. Compliance is not discussed.

Repeated measures of analysis of variance (ANOVA) revealed significant time, group, and time×group effects on SBP (P<0.001 for all). With significant SBP reductions in both groups (P<0.05), reduction in the active group (-7.43 mmHg) was significantly better than in control (-1.91 mmHg; P<0.001). Repeated measures of analysis of variance (ANOVA) revealed significant time (P<0.001), group (P=0.002), and time × group (P=0.001) effects on DBP. With significant DBP reductions in both groups (P<0.05), reduction in the active group (-6.70 mmHg) was significantly better than in control (-3.96 mmHg; P<0.001). No AEs are mentioned.

Despite significantly better BP results in the active group, credit must also be given to the weight reduction, DASH regimen, improved salt/potassium intake ratio, and exercise program recommended to all participants. It is unknown whether these dietary and physical activities may have had synergistic effects with hibiscus. In considering hibiscus' effects, its antioxidant and lipid-improving activities may be most relevant in reducing BP in these mildly hypertensive adults. Hibiscus' anthocyanins can reduce low-density lipoprotein oxidation and thus retard atherosclerosis. Another hibiscus compound, not named, causes nitric oxide release from endothelial cells, increasing kidney filtration and thus diuresis, a desirable effect of many BP drugs. Other studies report that hibiscus lowered BP in mildly hypertensive diabetic patients. Different therapeutic doses and the safety of hibiscus and hibiscus extracts are reported. In one study, BP rose within few days of stopping hibiscus therapy.

Among limitations to this study, the authors cite small sample time, short enrollment period, restriction to just one medical center, and "[p]oor assistance of patients." Positive beliefs about herbal medicine, however, are mentioned as improving willingness to try herbal over conventional drugs among some populations. Hibiscus grows profusely in many areas of the world and could be sustainable in both cost and environmental impact. Hibiscus could be an effective means to reducing BP in low- and higher income nations. More studies are needed of its mechanisms and effective dosage and duration, as well as potential interactions with other BP drugs.

—Mariann Garner-Wizard

Referenced article can be accessed at http://www.japtr.org/article.asp?issn=2231-4040;year=2019;volume=10;issue=3;spage=107;epage=111;aulast=Jalalyazdi.