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FILE: ▪ Hibiscus (*Hibiscus sabdariffa*)
▪ Hypertension
▪ Type II Diabetes

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RE: Antihypertensive Effects of Sour Tea (Hibiscus) in Patients with Type II Diabetes

Mozaffari-Khosravi H, Jalali-Khanabadi B-A, Afkhami-Ardekani M, Fatehi F, Noori-Shadkam M. The effects of sour tea (*Hibiscus sabdariffa*) on hypertension in patients with type II diabetes. *J Human Hypertension.* 2009(23):48-54.

Hypertension and diabetes often coexist, and hypertension is twice as frequent in diabetic as in non-diabetic persons. Hypertension contributes significantly to the morbidity and mortality of diabetic persons and accounts for as much as 75% of the cardiovascular disease risk in this population. Although hypertension is more frequent in developed than in developing countries, its prevalence is rapidly increasing in many developing countries, notably Iran, where the prevalence of diabetes is higher than in many other countries. Both animal and human studies have shown that extracts of sour tea (*Hibiscus sabdariffa*; ST), also known in the West as roselle, beneficially affect lipid profiles and reduce hypertension. The mechanisms responsible for the blood pressure-lowering effect are not proven; however, the antioxidative and diuretic effects of ST are thought to be primarily responsible for its beneficial effects. The objective of the present study was to compare the short-term effects of ST with those of black tea (*Camellia sinensis*; BT) on blood pressure in patients with type II diabetes.

Sixty mildly hypertensive [systolic blood pressure (SBP) not >160 mm Hg and diastolic blood pressure (DBP) not >100 mm Hg] patients with type II diabetes (duration: >5 years) were enrolled in this double-blind, randomized, controlled trial, which was conducted at the Yazd Diabetes Research Center in Yazd, Iran. The patients were randomly assigned to consume a glass of either ST or BT twice daily for 1 month. The ST was imported from Saudi Arabia, and BT from Sri Lanka. Each tea sachet weighed 2 g and was steeped in 240 ml of boiling water, to which 5 g of sugar was added, before ingestion. The subjects were prohibited from drinking any other tea during the study. SBP, DBP, and pulse pressure (PP) were measured on days 1, 15, and 30.

Fifty-three patients (45 women and 8 men), 27 in the ST group and 26 in the BT group, completed the study. At baseline, no significant differences in weight, age, or body mass index were observed between the 2 groups; however, significant differences in DBP ($P = 0.01$), SBP ($P < 0.001$), and PP ($P = 0.003$) were observed between groups. DBP did not change significantly during the study and did not differ significantly between groups at any time point. In contrast, SBP decreased significantly ($P < 0.05$) by 7.76% from baseline (134.4 ± 11.8 mm Hg) to day 15 (123.3 ± 10.9 mm Hg) and by 8.1% from day 15 to day 30 (112.7 ± 5.79 mm Hg) in the ST group and increased significantly ($P < 0.05$) by 2.7% from baseline (118.6 ± 14.9 mm Hg) to day 15 (120.7 ± 13.6 mm Hg) and by 6.2% from day 15 to day 30 (127.3 ± 8.74 mm Hg) in the BT group. Furthermore, SBP was significantly different between the ST and BT groups at baseline and on day 30 ($P < 0.001$). PP decreased significantly ($P < 0.001$) from baseline (52 ± 12.2 mm Hg) to day 15 (34.5 ± 9.3 mm Hg) in the ST group and increased significantly ($P = 0.01$) from baseline (41.9 ± 11.7 mm Hg) to day 30 (47.3 ± 9.6 mm Hg) in the BT group. PP was significantly different between the ST and BT groups at baseline ($P = 0.003$) and day 30 ($P < 0.001$). The therapeutic effectiveness of the interventions (defined as a decrease of ≥ 10 mm Hg in the measured variables) over the 30-day study period was calculated as 48.1% in the ST group and as 15.4% in the BT group ($P = 0.01$). Compliance was 95% in the BT group and 92% in the ST group.

A significant positive therapeutic effect of ST ingestion on blood pressure was observed in the diabetic patients in this study. The authors conclude that the present study "supports the results of similar studies in which antihypertensive effects have been shown for ST." However, while this and other studies have established the human tolerance of ST, the authors note that its side effects, safety, and sustainability of effects on BP should be evaluated further. The authors also admit to two egregious shortcomings of their study, namely, 1) the lack of a control group, and 2) the ignoring of changes in blood chemicals such as Na, K, and ACE.

—Brenda Milot, ELS

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