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FILE: ■ Cocoa (*Theobroma cacao*)
■ Green and Black Tea (*Camellia sinensis*)
■ Blood Pressure

HC 050371-330

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RE: Effects of Cocoa and Tea Intake on Blood Pressure: Cocoa Takes the Cake

Taubert D, Roesen R, Schömig E. Effect of cocoa and tea intake on blood pressure: a meta-analysis. *Arch Intern Med.* April 9, 2007;167:626-634.

The consumption of tea (*Camellia sinensis*) and cocoa (*Theobroma cacao*) has been associated with lower incidences of cardiovascular events, and both have been reported to have hypotensive and cardioprotective properties. The authors undertook a meta-analysis of randomized controlled trials to determine the effects of the consumption of cocoa products or black and green tea on systolic blood pressure (SBP) and diastolic blood pressure (DBP).

The authors searched MEDLINE, EMBASE, SCOPUS, Science Citation Index, and the Cochrane Controlled Trials Register from 1966 to October 2006. They also compiled citations from the reference lists of original and review articles. They searched for studies in parallel group or crossover design involving 10 or more adults whose blood pressure was assessed before and after receiving cocoa products or black or green tea for at least 7 days.

Ten studies met the authors' inclusion criteria: 5 addressing the relation between cocoa intake and blood pressure and 5 addressing the relation between tea intake and blood pressure.

The cocoa studies included 5 randomized studies of cocoa consumption involving 173 subjects with a median duration of 2 weeks. Of those 5 studies, 4 reported a reduction of SBP and DBP after cocoa consumption. Compared with the cocoa-free controls, the pooled decrease was -4.7 mm Hg (95% confidence interval [CI], -7.6 to -1.8 mm Hg; P=0.002) in SBP and -2.8 mm Hg (95% CI, -4.8 to -0.8 mm Hg; P=0.006) in DPB for cocoa intake. In those 4 studies, similar amounts of cocoa were applied to different study populations. Younger subjects with mild essential hypertension experienced the highest decreases in SBP and DBP; elderly hypertensive subjects and younger normotensive subjects showed smaller reductions. The authors report also that the amount of the ingested cocoa phenols appears to be essential for the magnitude of the blood pressure reduction.

The 5 studies of tea consumption (4 with black tea and 1 with green tea) involved 343 subjects with a median duration of 4 weeks. Of those 5 studies, none was associated with significant alterations in blood pressure. Compared with the controls, the pooled change was 0.4 mm Hg (95% CI, -1.3 to 2.2 mm Hg; P=0.63) in SBP and -0.6 mm Hg (95% CI, -1.5 to 0.4 mm Hg; P=0.38) in DBP for tea intake. The authors report that the negative outcome of the tea interventions was independent of the subjects' age, the presence of hypertension, or study duration.

Studies have suggested that the polyphenols in cocoa-containing foods are responsible for the reduction in blood pressure. The authors point out that tea is also rich in polyphenols, and the total polyphenol doses that were ingested with the tea diets in these reported studies were not lower than those ingested with the cocoa diets. They also point out, however, that the composition of the polyphenols differs between cocoa and tea. "The different plant phenols must be differentiated with respect to their blood pressure lowering potential and thus cardiovascular disease prevention, supposing that the tea phenols are less active than cocoa phenols," they write.

Limitations of these findings, as noted by the authors, include the fact that the lack of blinding of participants or investigators to the intervention in most of the studies increased the risk of expectation bias, the fact that only a few studies with small sample sizes were included, and the fact that the studies had only a short duration.

The authors conclude that "controlled data from short-term randomized and long-term observational studies suggest clinically relevant reductions of SBP and DBP with the use of cocoa products, supported by the biological plausibility and consistent laboratory data of the vasodilator activity of cocoa products. In contrast, cumulative evidence does not support substantial effects of tea consumption on blood pressure."

—*Shari Henson*

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