

Effect of Cocoa and Tea Intake on Blood Pressure

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FROM ABSTRACT

Background

Epidemiological evidence suggests blood pressure–lowering effects of cocoa and tea.

We undertook a meta-analysis of randomized controlled trials to determine changes in systolic and diastolic blood pressure due to the intake of cocoa products or black and green tea.

Methods

MEDLINE, EMBASE, SCOPUS, Science Citation Index, and the Cochrane Controlled Trials Register were searched from 1966 until October 2006 for studies in parallel group or crossover design involving 10 or more adults in whom blood pressure was assessed before and after receiving cocoa products or black or green tea for at least 7 days.

Results

Five randomized controlled studies of cocoa administration involving a total of 173 subjects with a median duration of 2 weeks were included.

After the cocoa diets, the pooled mean systolic and diastolic blood pressure were -4.7 mm Hg and -2.8 mm Hg lower, respectively, compared with the cocoa-free controls.

Five studies of tea consumption involving a total of 343 subjects with a median duration of 4 weeks were selected.

The tea intake had no significant effects on blood pressure.

Conclusion

Current randomized dietary studies indicate that consumption of foods rich in cocoa may reduce blood pressure, while tea intake appears to have no effect.

THESE AUTHORS ALSO NOTE:

“An increased consumption of fruits and vegetables is recommended as a first-line therapeutic approach in current hypertension control guidelines.”

“At least part of the reduction of blood pressure and lowering cardiovascular risk has been attributed to the polyphenols (flavonoids) in fruits and vegetables.”

“Tea and cocoa products account for the major proportion of total polyphenol intake in Western countries. However, cocoa or tea are currently not implemented in cardioprotective or antihypertensive dietary advice, although both have been associated with lower incidences of cardiovascular events”

RESULTS

Of 5 cocoa studies, 4 reported a reduction of SBP and DBP after cocoa consumption. The pooled decrease was 4.7 mm Hg in SBP and 2.8 mm Hg in DBP for cocoa intake.

“Of the 5 studies on tea consumption, none was associated with significant alterations in blood pressure.”

In the 4 cocoa studies, which were associated with blood pressure reductions, similar amounts of cocoa were applied to different study populations.

COMMENTS BY AUTHORS

“In our meta-analysis of randomized controlled trials in adults, diets rich in cocoa were associated with statistically significant reductions in SBP and DBP, whereas black or green tea did not lead to apparent changes in blood pressure.”

“The magnitude of the hypotensive effects of cocoa is clinically noteworthy; it is in the range that is usually achieved with monotherapy of beta-blockers or angiotensin-converting enzyme inhibitors.”

“At the population level, a reduction of 4 to 5 mm Hg in SBP and 2 to 3 mm Hg in DBP would be expected to substantially reduce the risk of stroke (by about 20%), coronary heart disease (by 10%), and all-cause mortality (by 8%).”

The blood pressure-lowering effects of cocoa have a biological basis. Cocoa is a rich source of polyphenols, and cocoa extracts have been shown to cause arterial vasodilation by increasing endothelial production of nitric oxide.

Recent evidence suggests that the “long-term effects of high cocoa consumption on blood pressure may be underestimated by the presented meta-analysis of short-term trials. Moreover, the high degree of risk reduction of about 50% in cardiovascular and all-cause mortality associated with regular cocoa intake suggests that cocoa phenols also confer genuine cardiovascular protection beyond blood pressure reduction, possibly due to protective nitric oxide-mediated effects on endothelium or platelets.”

“In conclusion, 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 phenols.”

"In contrast, cumulative evidence does not support substantial effects of tea consumption on blood pressure."

"It appears reasonable to allow phenol-rich cocoa products such as dark chocolate for calorie-balanced substitution of high-fat dairy products, sugar confectionary, or cookies of the usual diet. Rationally applied, cocoa products might be considered part of dietary approaches to lower hypertension risk."

KEY POINTS FROM DAN MURPHY

- 1) This meta-analysis study showed that the cocoa diets reduced systolic blood pressure by 4.7 mm Hg, and reduced diastolic blood pressure by 2.8 mm Hg. This magnitude of reduction in blood pressure is considered to be "statistically significant."
- 2) "The magnitude of the hypotensive effects of cocoa is clinically noteworthy; it is in the range that is usually achieved with monotherapy of beta-blockers or angiotensin-converting enzyme inhibitors."
- 3) "At the population level, a reduction of 4 to 5 mm Hg in SBP and 2 to 3 mm Hg in DBP would be expected to substantially reduce the risk of stroke (by about 20%), coronary heart disease (by 10%), and all-cause mortality (by 8%)."
- 4) These authors conclude "current randomized dietary studies indicate that consumption of foods rich in cocoa may reduce blood pressure, while tea intake appears to have no effect."
- 5) "An increased consumption of fruits and vegetables is recommended as a first-line therapeutic approach in current hypertension control guidelines." "At least part of the reduction of blood pressure and lowering cardiovascular risk has been attributed to the polyphenols (flavonoids) in fruits and vegetables."
- 6) "The high degree of risk reduction of about 50% in cardiovascular and all-cause mortality associated with regular cocoa intake suggests that cocoa phenols also confer genuine cardiovascular protection beyond blood pressure reduction, possibly due to protective nitric oxide-mediated effects on endothelium or platelets."
- 7) "In conclusion, 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 phenols."
- 8) "It appears reasonable to allow phenol-rich cocoa products such as dark chocolate for calorie-balanced substitution of high-fat dairy products, sugar confectionary, or cookies of the usual diet."