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## **Aging and vascular responses to flavanol-rich cocoa.**

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### **Abstract**

**OBJECTIVES:** Strong evidence has secured aging as a powerful predictor of both cardiovascular risk and endothelial dysfunction, yet specific treatment is not available. We tested the hypothesis that vascular responsiveness to flavanol-rich cocoa increases with advancing age. We have previously shown that flavanol-rich cocoa induced peripheral vasodilation, improving endothelial function via a nitric oxide (NO)-dependent mechanism.

**METHODS:** We studied blood pressure and peripheral arterial responses to several days of cocoa in 15 young (< 50 years) and 19 older (> 50) healthy subjects.

**RESULTS:** The nitric oxide synthase (NOS) inhibitor N(omega)-nitro-L-arginine-methyl-ester (L-NAME) induced significant pressor responses following cocoa administration only among the older subjects: systolic blood pressure (SBP) rose 13 +/- 4 mmHg, diastolic blood pressure (DBP) 6 +/- 2 mmHg (P = 0.008 and 0.047, respectively); SBP was significantly higher in the older subjects (P < 0.05). Flow-mediated vasodilation, measured by tonometry in the finger, was enhanced with flavanol-rich cocoa in both groups, but significantly more so among the old (P = 0.01). Finally, basal pulse wave amplitude (PWA) followed a similar pattern. Four to six days of flavanol-rich cocoa caused a rise in PWA in both groups. At peak vasodilation following acute cocoa intake on the final day, both groups showed a further, significant rise in PWA. The response in the older subjects was more robust; P < 0.05. L-NAME significantly reversed dilation in both groups.

**CONCLUSIONS:** Flavanol-rich cocoa enhanced several measures of endothelial function to a greater degree among older than younger healthy subjects. Our data suggest that the NO-dependent vascular effects of flavanol-rich cocoa may be greater among older people, in whom endothelial function is more disturbed.

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