
Objective The health benefits of dietary fiber and polyphenols in reducing cardiovascular risk have been evidenced. Cocoa husks are a good source of both components and a considerable by-product. A cocoa product rich in cocoa fiber (CP) has been produced from cocoa husks and this study assessed whether its regular consumption may be a strategy to improve lipid profile, serum glucose and antioxidant activity as well as blood pressure in moderately hypercholesterolemic subjects.

Methods In this free-living, noncontrolled, non-randomized, two-month-long, open intervention trial, 21 volunteers consumed daily two servings of CP, which provided 12 g of dietary fiber and 283 mg of soluble polyphenols. Subjects were moderately hypercholesterolemic (>200 mg dl (-1)), nonvegetarian, nonsmoker, women and men between 18 and 45 years old, with a body mass index under 30 kg m(-2), not suffering from any other chronic pathology. Blood samples were drawn and anthropometric measurements, systolic (SBP) and diastolic (DBP) blood pressures were evaluated at the baseline, and at weeks 2, 4, and 8. Serum lipids, creatinine, uric acid, glucose, C-reactive protein, ferric reducing/antioxidant power and malondialdehyde (MDA) levels were analyzed.

Results Glucose (p = 0.019), SBP (p = 0.001), DBP (p = 0.001) and MDA (p = 0.036) decreased, HDL-cholesterol slightly increased, whereas the rest of the parameters remained similar.

Conclusions This preliminary study suggests that CP might be considered part of a dietary approach or a functional food or ingredient for the food industry to achieve hypotensive and hypoglycemic effects in moderately hypercholesterolemic subjects without inducing changes in body weight and waist circumference, although results should be confirmed in a longer, controlled human study.

Dark chocolate and blood pressure: a novel study from Jordan. Al-Safi SA, Ayoub NM, Al-Doghim I, Aboul-Enein FH.

Aim The goal of this study was to assess the effect of dark chocolate intake on cardiovascular parameters like blood pressure and heart rate values in a normotensive population.

Subjects and Methods This is a randomized cross-sectional study involving a total of 14,310 adults that were selected from various regions of Jordan. Well-trained pharmacy students interviewed participants in the outpatient settings. Participants reported their weekly intake of dark chocolate that has been further classified into mild (1 – 2 bars/week), moderate (3 – 4 bars/week), and high intake (> 4 bars/week). For each participant, the systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate were measured three times with (10 – 15) minute intervals in the sitting position and the resting state. The arterial blood pressure (ABP) was calculated from the measured SBP and DBP values.

Results All measured blood pressure values were significantly decreased for participants who reported higher dark chocolate consumption. Our results showed that heart rate values were not affected by variable intake of dark chocolate. In addition, increasing dark chocolate intake was associated with a significant decrease of blood pressure values in participants irrespective of the family history of hypertension or the age of the individual. However, heart rate values were unaffected.

Conclusion Higher intake of dark chocolate can be associated with lower values of blood pressure, while its effect on heart rate values was not consistent.

The effectiveness and cost effectiveness of dark chocolate consumption as prevention therapy in people at high risk of cardiovascular disease: best case scenario analysis using a Markov model. Zomer E, Owen A, Magliano DJ, Lieu D, Reid CM.

Objective To model the long-term effectiveness and cost effectiveness of daily dark chocolate consumption in a population with metabolic syndrome at high risk of cardiovascular disease.

Design Best case scenario analysis using a Markov model.

Setting Australian Diabetes, Obesity and Lifestyle study.

Participants 2,013 people with hypertension who met the criteria for metabolic syndrome, with no history of cardiovascular disease and not receiving antihypertensive therapy.

Main Outcome Measures Treatment effects associated with dark chocolate consumption derived from published meta-analyses were used to determine the absolute number of cardiovascular events with and without treatment. Costs associated with cardiovascular events and treatments were applied to determine the potential amount of funding required for dark chocolate therapy to be considered cost effective.

Results Daily consumption of dark chocolate (polyphenol content equivalent to 100 g of dark chocolate) can reduce cardiovascular events by 85 (95% confidence interval 60 to 105) per 10,000 population treated over 10 years. SA40 (£25; $31; $42) could be cost-effectively spent per person per year on prevention strategies using dark chocolate. These results assume 100% compliance and represent a best case scenario.

Conclusions The blood pressure and cholesterol lowering effects of dark chocolate consumption are beneficial in the prevention of cardiovascular events in a population with metabolic syndrome. Daily dark chocolate consumption could be an effective cardiovascular preventive strategy in this population.


Objective To investigate the inhibitory effect of cocoa polyphenol extract (CPE) on adipogenesis and obesity along with its mechanism of action.

Methods and Results 3T3-L1 preadipocytes were cultured with isobutylmethylxanthine, dexamethasone and insulin (MDI), and male C57BL/6J mice (N=44) were fed a high-fat diet (HFD) for 5 weeks with or without CPE. CPE at 100 or 200 µg ml(-1) inhibited MDI-induced lipid accumulation without diminishing cell viability. In particular, CPE reduced the protein expression levels of PPARγ and CEBPα, and blocked mitotic clonal expansion (MCE) of preadipocytes by reducing proliferating signaling pathways. This in turn attenuates lipid accumulation during the differentiation of 3T3-L1 preadipocytes. CPE effectively suppressed MDI-induced phosphorylation of extracellular signal-regulated kinase (ERK) and Akt, and their downstream signals. We then examined whether CPE regulates insulin receptor (IR), a common upstream regulator of ERK and Akt. We found that although CPE does not affect the protein expression level of IR, it significantly inhibits the activity of IR kinase via direct binding. Collectively, the results suggested that CPE, a direct inhibitor of IR kinase activity, inhibits cellular differentiation and lipid accumulation in 3T3-L1 preadipocytes. Consistently, CPE attenuated HFD-induced body weight gain and fat accumulation in obese mice fed with a HFD. We also found that HFD-induced increased fasting glucose levels remained unaffected by CPE.

Conclusion This study demonstrates that CPE inhibits IR kinase activity and its proliferative downstream signaling markers, such as ERK and Akt, in 3T3-L1 preadipocytes, and also prevents the development of obesity in mice fed with a HFD. International Journal of Obesity advance online publication, 29 May 2012; doi:10.1038/ijo.2012.85.

Dark chocolate for children’s blood pressure: randomized trial. Chan EK, Quach J, Mensah FK, Sung V, Cheung M, Wake M.

Background Higher adult blood pressure, even without hypertension, predicts cardiovascular outcomes, and is predicted by childhood blood pressure. Regular dark chocolate intake lowers blood pressure in adults, but effects in children are unknown.

Aim To examine the feasibility of school-based provision of dark chocolate and its short-term efficacy in reducing mean group blood pressure.

Methods 194 children (aged 10 – 12 years) were randomized by class to intervention (7 g dark chocolate daily for 7 weeks, n=124) or control (n=70) groups; 98% and 93% provided baseline and follow-up measurements, respectively.

Results Intervention and control students had similar systolic (mean difference