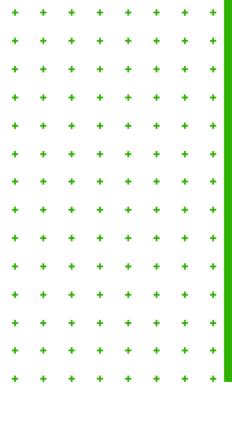
A Mixed Fruit and Vegetable Concentrate Increases Plasma Antioxidant Vitamins and Folate and Lowers Plasma Homocysteine in Men

Samman S, Sivarajah G, Man JC, Ahmad ZI, Petocz P, Caterson ID. A mixed fruit and vegetable concentrate increases plasma antioxidant vitamins and folate and lowers plasma homocysteine in men. J Nutr. 2003 Jul;133(7):2188-93. doi: 10.1093/jn/133.7.2188. PMID: 12840177.



BACKGROUND

- There is an inverse relationship between fruit and vegetable consumption and the risk of coronary heart disease (CHD).
- + Fruit and vegetables are a source of nutrients that have been observed to possibly reduce:
 - LDL cholesterol
 - Blood pressure
 - Homocysteine
- In addition, a high intake of fruit and vegetables may improve the antioxidant status and endothelial function.





AIM

The aim of this study was to evaluate the bioavailability of selected carotenoids and vitamins from a fruit and vegetable juice powder concentrate (FV) and their impact on antioxidant status, homocysteine, plasma lipids, and insulin resistance in men.

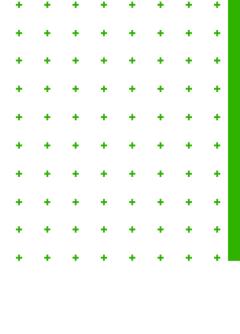


METHODS

Double-blind, randomized, placebo-controlled, crossover trail

- + Subjects: 32 healthy men, 13 smokers and 19 non-smokers
- Inclusion criteria:
 - Age: 18-50 years
 - No nutritional supplements or medications
 - $-BMI < 30 \text{ kg/m}^2$
 - No reported chronic disease and no history of metabolic disease
- **Groups:**
 - Intervention Group: took an encapsulated fruit and vegetable juice powder concentrate (FV; Juice Plus+®)
 - Placebo Group
- + Cross over design: 2 intervention periods (6 weeks), separated by a 3-week wash-out period.
- Blood samples were collected at baseline, on day 21, and after the full intervention period (6 weeks).

 After the group crossover the blood sample collection pattern was repeated.
- + Coronary heart disease risk was assessed by measuring the concentrations of homocysteine, lipids, lipoproteins, glucose and insulin.



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MAIN RESULTS

- Compared to placebo, FV significantly increased the concentrations of plasma ascorbic acid (AA), β-carotene, retinol, folic acid and α-tocopherol.
- + After supplementation blood levels of folate significantly rose by 78.8% and homocysteine levels significantly decreased by 8.4%.
- Levels of β-carotene rose 4-fold, while concentrations of AA and α -tocopherol increased 32% and 9% respectively.
- + There was a positive association between plasma levels of AA and resistance of LDL to oxidation.
- + Plasma glucose, insulin, and lipid concentrations were unaffected. Results were similar among smokers and non-smokers.



CONCLUSION

"In conclusion, supplementation with a mixed fruit and vegetable concentrate increases plasma ascorbic acid, β -carotene and folate, and lowers plasma homocysteine."

