

ANALYSIS OF ANTIOXIDANT QUALITY

Protocol

Vitamins were obtained from Sigma, Cranberry flour (Cranberry Protein Powder) from Bernard Lager and frozen cranberries from the local supermarket. The samples were dissolved in methanol, water or a combination. Polyphenols were measured as free polyphenols in the cranberry products using the Folin colorimetric reagent and catechin as the standard. Then the antioxidants were added at concentrations from 0.05 to 10 μM to our standard LDL+VLDL preparation (in vitro model of heart disease) which was then oxidized for six hours with cupric ion and the oxidation products measured by fluorometry of thiobarbituric acid-reactive substances. The concentration of the antioxidant to inhibit the oxidation 50% was calculated (IC50) and 1/IC50 calculated in order to compare results. The greater the 1/IC50 value, the better the quality of the antioxidants.

Quality of non-vitamin antioxidants is important to measure because polyphenols after ingestion are present in the blood at very low concentrations (<1 Micromolar μM) whereas vitamins C and E are present at concentrations >20 micromolar. In order to act as antioxidants in the body at this low of a concentration the polyphenols have to be very high quality (very powerful) antioxidants.

Results

Sample	IC50	1/IC50
Vitamin C	1.45 μM	0.69
Cranberry Flour (Cranberry Protein Powder)	0.59 μM	1.69
Cranberries	0.86 μM	1.16
Beta Carotene	4.30 μM	0.23
Vitamin E	2.40 μM	0.42

Discussion

The cranberry flour has 46% more powerful antioxidants than cranberries, almost twice as powerful as vitamin C, almost 8 times more powerful than beta carotene and 4 times more powerful than vitamin E.

Sincerely

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3/15/2001