



Whole Apples vs. Vitamin C Pills

Foods First: An Apple A Day Beats Pills Hands Down

Since the beginning of time, we humans have been consuming vitamins and minerals in food form. Our cells are designed to take up and use nutrients such as vitamin C with their full array of companion nutrients found in whole foods. Isolated nutrients in supplement form are a relatively new addition to the human diet.

A group of researchers with the Department of Food Sciences at Cornell University designed a study to compare a whole apple extract (including skins) to purified isolated vitamin C and the results are a real eye-opener.

WHOLE APPLES WIN THE DAY

The antioxidant activity of 100 grams (about 3 ounces) of the apple extract equaled that of a full 1500 milligrams of Vitamin C alone. The skin was deliberately included in the apple extract, since it contains higher amounts of phytochemicals – such as phenolic compounds - than does apple flesh. Moreover, antioxidants such as quercetin glycosides are only found in the skins

Get this: the apple extract contained only 5.7 mg of vitamin C, a drop in the bucket (0.35 percent) compared to the 1500 mg of the purified ascorbic acid, but the antioxidant activity was incredibly high. This discovery led Eberhardt et al to speculate that "almost all of the antioxidant activity in apples must be due to phytochemicals."

Although the apple extract showed a statistically meaningful ability to inhibit the proliferation of tumor cells, the effect of the vitamin C alone in the apple was virtually nil. This suggests that "almost all the antioxidant activity in apples must be due to phytochemicals" other than Vitamin C, according to study authors.

DON'T FORGET THE SKINS

Two additional analyses of apple extracts showed that tumor cell proliferation was inhibited more significantly in apple extracts with skins than apple extracts without skins. Researchers in this study speculate that the in vitro inhibition of cancer cell proliferation is a consequence of the apple's combination of phenolic acids, flavonoids and other phytochemicals.

The take-home message is simple. Favor food first. There's plenty of vitamin C in a whole foods diet rich in fruits and vegetables.

Study: EBERHARDT, M.V.; LEE, C.Y. and LIU, R.H. Antioxidant activity of fresh apples. Nature, June 2000, vol. 405, no. 6789, p. 903-904.