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VITAMIN C

Technical Bulletin

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Vitamin C is the common name for L-Ascorbic Acid and other compounds that exhibit similar biological activity. Ascorbic acid is the most common form and is used for vitamin fortifications. The oxidized form, dehydroascorbic acid also exhibits similar vitamin C activity. Isoascorbic acid, also known as erythroic acid only exhibits about five percent of the vitamin C activity of ascorbic acid. Names used in the past for ascorbic acid include antiscorbutic vitamin and hexuronic acid.

Vitamin C plays an essential role in human health. Currently it is best known for its antioxidant properties. It's key role, however is in the prevention of scurvy, a devastating deficiency disease. Vitamin C deficiency manifests itself by causing fragile capillaries, often resulting in hemorrhaging, and muscle weakness. Other indications are loss of appetite, decreased immunity, muscle tenderness, and decreased heat resistance.

Sources which contain naturally high levels of vitamin C are citrus fruits, berries, and rose hips with lesser levels found in vegetables and organ meats such as liver and kidneys. Humans are unable to synthesize vitamin C internally and must depend on their food for adequate supplies.

Vitamin C Content of Some Foods

FOOD	mg/100g	FOOD	mg/100g
Apple	10-30	Orange	50
Asparagus	15-30	Potato	10-30
Banana	10	Raspberry	18-25
Broccoli	90-150	Rose Hips	1000
Cabbage	30-60	Spinach	50-90
Guava	300	Strawberry	40-90
Melons	13-33	Tangerine	30

ASSAY PRINCIPAL AND APPLICABILITY

Ascorbic acid is extracted from the sample into a methanol/metaphosphoric acid/water mixture. The ascorbic acid is then converted to dehydroascorbic acid by oxidizing it using activated charcoal. The dehydroascorbic acid is then reacted with ortho-phenylenediamine to form a fluorophor in solution. The intensity of the fluorescence is measured and compared to the fluorescence of a standard. A blank is run simultaneously with the sample to assure against potential method interferences. This method is applicable to all foodstuffs except those with added erythroic acid. Dehydroascorbic and ascorbic acids can be individually assayed.

Lower Detection Limit	0.5 mg/100g(w/w)
Reporting Units	mg/100g
Information required with sample	Estimate of level
Specail Notes	Indicate if sample is vitamin concentrate

NUTRITION INFORMATION

<u>Recommended Daily Allowances</u>	<u>mg</u>
For labeling purposes:	60
Infants	30-35
Children	40-45
Pregnant Females	70
Lactating Females	90-95
Adult Females	50-60
Adult Males	50-60

REFERENCES:

AOAC 967.22 Vitamin C (Total) in Vitamin Preparations
Deutsch, M.J., and Weeks, C.E., Journal of AOAC, vol 48, No 6, 1965, pp 1248-1256
The Vitamins, Gerald F. Combs, Jr., Academic Press, 1992.

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