



## Preserving Color and Preventing Browning of Foods

When certain fruits and vegetables are cut, the exposure of the flesh to oxygen results in enzymatic browning. There are a number of ways to prevent this from occurring.

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**Martha Zepp, Penn State University**

There are a number of different products to use to prevent this naturally occurring process, assuring a quality preserved product.

**Ascorbic acid**, also known as Vitamin C, is used as an anti-oxidant to keep fruit from darkening.

- Pure ascorbic acid crystals may be difficult to find at the retail level; a few supermarkets and

drug stores may sell them, and it may be ordered online. Soak fruit immediately after cutting for 10 minutes in a solution prepared with 1 teaspoon of pure ascorbic acid dissolved in one gallon of cold water.

- Crushed Vitamin C tablets can also be used. Six 500-milligram tablets equal 1 teaspoon of ascorbic acid. Vitamin C tablets may contain filler, which may turn the water cloudy, but this is not harmful.
- Erythorbic acid, also known as iso-ascorbic acid, is chemically identical to ascorbic acid, but because it is structurally different, has no Vitamin C activity. It

does have similar anti-oxidant properties though and can be used the same way ascorbic acid is used to retain color.

**Citric acid** is used to preserve the color of fresh cut fruit or as a pre-treatment for frozen and dried fruit. It can be used either alone or mixed with other substances, such as ascorbic acid, erythorbic acid, N-acetylcysteine, glutathione, and EDTA.

Most people find it more convenient to use commercially prepared anti-oxidant formulations such as Fruit-Fresh<sup>®</sup>, which contains a mixture of citric and ascorbic acids as active ingredients.

**Bottled lemon juice** can be made into a holding solution to prevent enzymatic browning by mixing ½ cup lemon juice with 2 quarts of water.

**Note:** Citric acid and lemon juice are not as effective in preventing browning as ascorbic acid solutions.

**Sulfites** are sulfur-containing compounds used for centuries to prevent discoloration and reduce spoilage during the preparation, dehydration, storage, and distribution of many foods. In recent years, sulfites have been implicated as initiators of asthmatic reactions in some people, especially those with asthma. As a result, the Food and Drug Administration (FDA) has banned the use of sulfites on fresh fruits and vegetables for sale or served raw to consumers. Sulfites are still used as an antimicrobial agent and to help preserve the color of some dried fruit products. Because of potential health issues, the Penn State Food Safety Team recommends the use of alternative methods for color preservation in home food preparation.

**Food colors** are available in both synthetic and natural forms. Although not necessary if good quality ingredients are used, there are several food grade food dyes available that are safe to use according to label directions. For example, red food coloring is an optional ingredient for canned cherry pie filling. Some highly colored fruits or vegetables can act as a natural color source. An example is beet juice which is often used to impart a red color to refrigerator pickled eggs.