

Citric Acid Encyclopedia Article

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Citric Acid

Citric acid is an organic (carbon based) acid found in nearly all citrus fruits, particularly lemons, limes, and grapefruits. It is widely used as a flavoring agent, preservative, and cleaning agent. The COOH group is a carboxylic acid group, so citric acid is a tricarboxylic acid, possessing three of these groups.

Citric acid is produced commercially by **fermentation** of sugar by several species of mold. As a flavoring agent, it can help produce both a tartness [caused by the production of **hydrogen** ions (H^+)] and sweetness (the result of the manner in which citric acid molecules "fit" into "sweet" **receptors** on our tongues). Receptors are protein molecules that recognize specific other molecules.

Citric acid helps to provide the "fizz" in remedies such as Alka-Seltzer trademark. The fizz comes from the production of **carbon** dioxide gas that is created when **sodium** bicarbonate (baking soda) reacts with acids. The source of the acid in this case is citric acid, also helps to provide a more pleasant **taste**.

Citric acid is also used in the production of hair rinses and low **pH** (highly acidic) or slightly acidic shampoos and toothpaste. As a preservative, citric acid helps to bind (or sequester) metal ions that may get into food via machinery used in processing. Many **metals** ions speed up the degradation of fats. Citric acid prevents the metal ions from being involved in a reaction with fats in foods and allows other preservatives to function much more effectively. Citric acid is also an intermediate in metabolic processes in all mammalian cells. One of the most important of these metabolic pathways is called the citric acid cycle (it is also called the **Krebs cycle**, after the man who first determined the role of this series of reactions). Some variants of citric acid containing **fluorine** have been used as rodent poisons.