

Acids or Acidulants

Acidulant are acids that either found naturally in vegetables, and fruits or are used as additives in beverage formulation. Mainly, tartaric acid adipic acid fumaric acid, citric acid, phosphoric acid, lactic acid malic acid and acetic acid are used to play different roles in different beverages.

The function of Acidulants are-

1. Provide sourness to product
2. Act as buffer to control acidity level
3. Enhance flavours
4. Increase palatability by balancing the sugar to acid ratio
5. Act as a mild preservative by regulating pH
6. Act as thirst quenching by increasing flow of saliva

a) Citric acid

Citric acid is widely used food acidulant. It has excellent solubility, very low toxicity, chelating ability and pleasantly sour taste. According to FDA citric acid and its sodium/ potassium salts is GRAS food additives. Citric acid is produced commercially by mold fermentation of sugar solutions using strains of *Aspergillus niger*. Citric acid and its sodium salt are used extensively in carbonated beverages as a buffer. It is also used as flavor preservative and enhancers.

b) Tartaric acid

Tartaric acid has a strong, tart taste and synthetic fruit flavours, mainly grape and cranberry. It is utilized in fruit juices and drinks. High prices and limited availability inhibit tartaric acid from widespread use as a food acidulant.

c) Malic acid

Malic acid is prepared by hydrolyzing maleic anhydride. Malic acid is used in a variety of products including many beverages, but mostly in fruit-flavoured sodas such as those with apple and berry flavor.

Malic acid is preferred acidulant in low-calorie drinks, and in cider and apple drinks, it enhances flavor and stabilizes the color of carbonated and noncarbonated fruit flavoured drinks. In sugar-free drinks, malic acid masks the off-taste produced by sugar substitutes.

d) Fumaric acid

Fumaric acid is principally used in fruit juices and wines. Fumaric acid competes with other acidulants such as citric acid, tartaric acid. Although it is less costly than some alternatives, its relatively strong acid taste and low solubility.

e) Phosphoric acid

Phosphoric acid and its salts account for one fourth of all the acids used in the food industries. Phosphoric acid has a tartness and flavor and is used almost entirely in cola flavored carbonated beverages. It is strong, giving the lowest attainable pH.

f) Ascorbic acid

Ascorbic acid also acts as antioxidant used in many beverages.

There are certain other acids like adipic acid, acetic and lactic acid that may also be used as acidulant in beverage in combination with other major acids.