

benefits

Smooth and Tart

Malic acid's tart taste is mellow, smooth and lingering. These characteristics lend themselves well to applications with multiple acidulants, high intensity sweeteners, flavors and seasonings. All fruits contain malic acid, usually in combination with citric acid. The malic acid naturally present in fruits enhances fruit flavor and sourness.

Malic acid has:

- Clean, mellow, smooth, persistent sourness
- More sourness per unit weight at low pH levels than most other acidulants
- Flavor enhancement and blending capabilities
- High solubility and rapid dissolution
- Lower hygroscopicity than citric or tartaric acids
- Lower melting point than other acids for easier incorporation into molten confections
- Good chelating properties with metal ions

Malic acid forms:

- Blends with other acidulants to reduce total cost of sourness
- Soluble calcium complexes that stabilize calcium fortified beverages
- Effective buffer systems over a wide pH range

Flavor Enhancement & Blending Capabilities

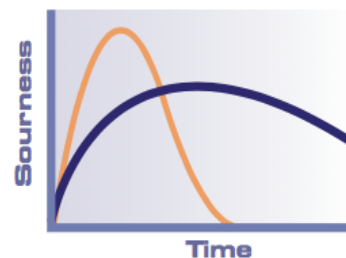
Bartek™ malic acid aids the formulator:

- Intensifies impact of many flavors in foods or beverages, often reducing amount of flavor needed
- Blends distinct flavors, resulting in a well-rounded flavor experience
- Improves aftertaste by extending impact of some flavors
- Increases burst and aromaticity of flavor notes in certain beverage applications
- Boosts savory flavors like cheese and hot peppers in snack food coatings
- Deepens and broadens flavor profiles of many products for a richer, more natural flavor experience

Synergy with High Intensity Sweeteners

Malic acid improves the sweet/sour balance and flavor profile of many products that include high intensity sweeteners.

Malic acid has a more persistent sourness than citric acid and, therefore, complements persistent sweeteners such as aspartame, sucralose and neotame, even when used as a secondary acidulant. Malic acid also rounds out the aftertaste of some high intensity sweeteners such as acesulfame K.



Grades

- Malic Acid Regular, FCC
- Malic Acid Coarse, FCC
- Malic Acid Powder, FCC
- Malic Acid NF-PhEur

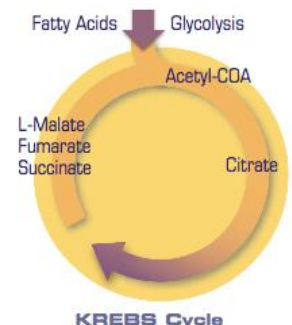
- Malic acid
- Citric acid

Essential Metabolism

Malic, citric and fumaric acids are key intermediates in the tricarboxylic acid cycle (the KREBS cycle), which functions in most living cells.

The anionic form of these acids is present in cellular metabolism at neutral pH.

Large amounts of L-malate, citrate and fumarate are produced and broken down in the human body daily.





applications

Fruit Flavored Beverages

Malic acid enhances fruit flavor in fruit flavored beverages, even when used as a secondary acidulant. For example, an orange flavored drink that contained a 95/5 citric/malic blend was preferred over the same beverage that contained only citric acid.

Functional Beverages

Malic acid is used in functional beverages to enhance fruit flavor as well as to create a smooth flavor profile. Many functional ingredients, such as botanical extracts or amino acids, are strongly flavored, and malic acid helps to round out their flavor notes. Functional beverages containing high intensity sweeteners also benefit from malic acid.

Calcium Fortified Beverages

Malic acid helps to stabilize calcium fortified beverages when soluble calcium salts are present. Soluble calcium complexes such as calcium citrate malate are formed even when malic acid comprises as little as 10% of the total acidity. These complexes help to prevent calcium salt precipitation during storage.

Confectioneries

Malic acid enhances fruit flavors and provides sourness in many types of confectioneries. It is often used with other acidulants, since combinations of acidulants provide more sourness per unit weight than single acidulants. Malic acid's persistent sourness balances the lingering sweetness of aspartame, sucralose and isomalt. Malic acid is used in high boiled sweets, chewing gums, confectionery jellies and compressed tablets.

Fruit Preparations

Malic acid enhances fruit flavors and creates a more natural flavor profile in jams, jellies and fruit preparations. Fruit preparations are acidified with malic acid so that the fruit flavor stays strong, even when the fruit preparation is used in dairy products, frozen desserts or baked goods.

Savory Products

In snack food coatings and tomato-based sauces, malic acid boosts the overall flavor impact and creates a richer, more rounded flavor profile.