



**BARTEK**

# Malic Acid and Sucralose in Beverage Formulation

Sucralose is used in many new beverages because it is much sweeter than sucrose and is stable in beverage systems. The use of sucralose in foods and beverages will increase dramatically during the next few years, according to a recent analysis by Morgan Stanley.

Sucralose has a sweet aftertaste, as shown by various sensory studies on the temporal profile of sweeteners. The results from one study are shown in Figure 1, at right.

Various flavour modifiers have been used by beverage developers to reduce this sweet aftertaste. For example, in cola beverages, tannic acid compounds have been used (Shamil, S. 2001. Reduction of lingering sweet aftertaste of sucralose. *U.S. Patent 6,265,012 B1*).

Malic Acid, because its sourness is more delayed and persistent than that of Citric Acid, complements the lingering sweetness of sucralose in many beverages. In most cases, Malic Acid is used as the secondary acidulant; Citric Acid being the primary acidulant.

Beverage formulators use low levels of Malic Acid to offset the aftertaste of sucralose. When combined with Citric Acid, levels of 50-200 ppm. of Malic Acid are recommended as a starting point.

Malic Acid also enhances fruit flavours and blends together discordant flavour notes, creating a smoother flavour profile. This is important in functional beverages.

Figure 1. Sweetness Duration of Selected Sweeteners (from Hood & Campbell, 1990)

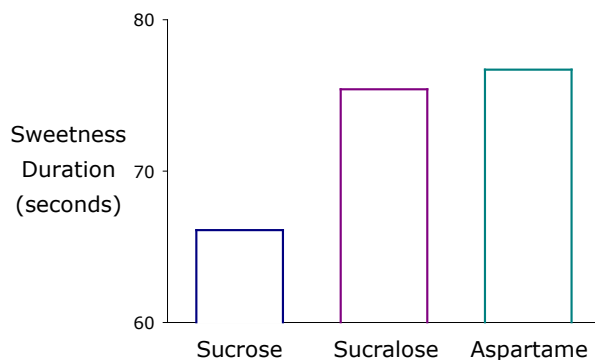


Figure 2. Number of New Beverages Containing both Sucralose and Malic Acid added to the BevNET.com database, by year



Beverages containing both sucralose and Malic Acid are being introduced at a growing rate, as shown in Figure 2, above. The worldwide demand for Malic Acid is growing at a faster rate than that of Citric Acid - one reason for this is that Malic Acid improves the flavour profile of beverages containing sucralose.