

EFLA 920 on isolated human lipase was investigated in a quantitative enzymatic test system. Lipase is an enzyme that helps to break down fat in the intestines into free fatty acids. Consequently, inhibiting lipase activity can reduce the quantity of free fatty acids and their intestinal absorption. The test showed a dose-dependent reduction of lipase activity by EFLA 920.

Additional investigations with Mate extract confirm a clear loss of weight combined with better diet constancy. Appetite was reduced and the general mental state of the participants was better compared to the control group. Moreover, the diuretic characteristics of Mate have a positive effect on the excretion of toxins eventually liberated during a diet.

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#### Healthier Breads

Breads and baked goods formulated with non-wheat cereals for extra fiber and essential fatty acids, such as sorghum, millet, or flaxseed, miss the gluten needed for structure. The finished products tend to be flat and contain doughy, wet areas in the crumb due to the collapsed structure. Whole grain products also stress the gluten network. The addition of hydrocolloid systems, like our Gelogen GMP 230, provides the necessary structure in these baked goods.

Fortifying baked goods

with nutritional ingredients can negatively affect the gluten characteristics, yeast activity, volume, flavor and texture. The presence of high concentrations of bread flour (high protein) in a sponge tends to minimize the effects of some of these nutritional ingredients by naturally exerting an influence on pH balance.

However, when reducing the flour in low carbohydrate systems and substituting ingredients such as resistant starches, pH is not naturally controlled. The addition of a system such as Gelogen GWB 805, compensates for these negative effects.

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#### Malic Acid

Malic acid enhances fruit flavours and is used in fruit flavoured beverages for this reason. Recent studies have indicated that this is a cognitive effect rather than a physico-chemical effect. Additional support for that conclusion comes from the fact that malic acid occurs naturally in all fruits. It and other organic acids such as citric acid are generated during the metabolism of fruit. Malic acid enhances citrus flavours especially well. For example; in one study, an orange flavoured beverage with 95/5 citric/malic was preferred over the same beverage with 100% citric acid. Malic Acid is present naturally at the following levels in citrus juices: lime (0.56% w/v – 0.77% w/v), lemon (0.22% w/v – 0.29% w/v), orange (0.08% w/v – 0.22% w/v), and grapefruit (0.04% w/v – 0.03% w/v).

Malic acid blends together discordant flavour notes, creating a smoother, more

rounded flavour profile. This is especially useful in beverages that contain strongly flavoured botanical extracts, B vitamins, amino acids, or high intensity sweeteners with objectionable aftertastes. Malic acid's flavour blending property is useful in enhanced waters that contain ingredients with health benefits.

The flavour profiles of these beverages are especially sensitive to changes in formulation; 15-50 ppm of malic acid may be enough to create a smoother flavour profile. Well-blended flavour was recently found to be an important attribute in beverage refreshment by a sensory study conducted for a multinational flavour company.

The persistence of sourness for each acidulant is different. Tartaric and citric acids have a sourness that dissipates quickly. Malic acid has a more persistent sourness and for this reason is often used in combination with high intensity persistent sweeteners such as aspartame, sucralose, and neotame. In this way, sweetness and sourness are balanced throughout the taste experience and there is no sweet aftertaste.

A sourness additive effect between acidulants occurs, similar to the additive effect that occurs between sweeteners. By using acidulant combinations, the same level of sourness intensity can be achieved with a lower total acid level than is the case with a single acidulant.

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#### Carrageenan

FMC BioPolymer has introduced SeaKem XP carrageenan and Avicel-plus XP cellulose gel to address the challenges of stabilising UHT processed fluid soy beverages. Avicel cellulose gel and SeaKem carrageenan are naturally-occurring stabilisers that have the capacity to suspend solids while providing creamy body and mouthfeel in soy-based protein beverages. FMC carrageenan and Avicel cellulose gel products have been used for many years to effectively stabilise high quality chocolate and calcium fortified dairy-based beverage products. Now with ever-growing interest in the health benefits associated with soy protein, FMC can ensure refreshing, good tasting soy beverages with these ingredients. "Each protein system provides unique challenges to formulators when creating food and beverage systems. Our technologists and researchers have developed recipes in order to achieve optimum stability in ready-to-drink, UHT processed protein beverages", said Greg Buliga at FMC.

Meanwhile FMC BioPolymer has also introduced Gelstar stabiliser to stabilise beverages with lower carbohydrates. The recent growth of RTD beverages containing lower/reduced levels of carbohydrates has presented formulators with the challenge of creating beverages with physical stability and organoleptic acceptance – without adding carb-counting solids. Physical stability also becomes a concern as the removal of sugar and other solids may result in problems with sedimentation and separation control.

FMC researchers have de-