PROCESSING
INSIGHTS

9 ways homogenization improves beverage quality

BEVERAGE, HOMOGENIZATION

Juices, nectars and RNGS (rice, nuts, grain and soya) beverages are all homogenized, but for different reasons. Some are emulsions – which entail one set of benefits – and some are suspensions, and are therefore improved in a different way. And some are actually a suspension and an emulsion at the same time. Here are nine ways homogenization improves the quality of beverages.

In juices and nectars:

1. Less sedimentation and separation

You could argue that one of the main reasons for homogenization is to make the big particles small and the small particles even smaller. The main benefit from that is less sedimentation and separation.

2. Bioavailability

Studies on tomatoes and carrots have shown that homogenization will increase the disruption of their cellular particles. Plant cells are in the size range of around 500µm, and the gap in the homogenizer is around 100µm, so when they pass through the gap, they rupture. When rupturing, they release intracellular matter into the juice. The result is higher bioavailability of the nutrients lycopene (red colour pigment) and beta-carotene (orange-red colour pigment and a form of Vitamin A).

3. Higher viscosity

Some fruits and vegetables – like oranges and tomatoes – contain the natural stabilizer pectin. When homogenized, the plant cells rupture and release the pectin into the juice, which increases its viscosity and stability.

4. Improved flavour

Many flavours are contained in the plant cells, meaning that they, too, can be released and made useful – this is especially true in vegetable juices.

5. Improved colour

Colour is basically a visual perception of bouncing light. Smaller particles scatter light differently than larger ones. Therefore a homogenized beverage appears to be more colourful than an unhomogenized one.

6. Better Brix

The sugar content in juices is measured in degrees Brix. Homogenization can help a low-Brix product "become" a high-Brix product by increasing the number of intermolecular bondings between particles. In effect, this will increase the producer's profit margin since less raw material can be used to achieve the same result.

In rice, nuts, grains and soy:

7. and 8. Double benefit – emulsion and suspension

The case with oat-based beverages is that often you want the product to resemble bovine milk in flavour and mouth feel. To achieve a desired fat content, you usually add 1.5% rapeseed oil to the beverage, essentially making the product into an emulsion between fat and water. At the same time, oat-based beverages naturally have many large particles in them, making them a suspension at the same time – and that makes the point of homogenization two-fold. Homogenization both increases the viscosity, giving a smoother product, and stabilizes the emulsion.

9. Less chalkiness

Larger particles in RNGS beverages cause so-called chalkiness – a dry, grainy sensation in the mouth. But by decreasing the number of particles that are larger than 150µm, homogenization improves mouth feel.

To learn how Tetra Pak can support you in improving the quality of your beverages through homogenization:

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