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Subject: Aroma emulsions high pressure homogenisation		



One of the most common applications of the homogenization, in the sector of the food chemistry, is the one about flavours treatment. In this application, the homogenization process of a product with high instability characteristics is necessary in order to give to the final product homogenous and physical stability in the time. These are key factors for its commercialization.

The homogenisation is a consequence of the size reduction of particles that are in suspension during the liquid phase and of their equal distribution. This process ensures the stability to the product both during the following production phases and improves the shelf life of the final product.

The principle of the high pressure homogenization consists in a volumetric pumping system that pushes a fluid product through the homogenizing valve. It is a nozzle where the liquid is pushed at very high pressure, up to a maximum of 1500 bar. Inside the valve, the product flows at very high speed (up to 500 m/sec) and, due to a sudden depression, cavitation and turbulence, the homogenisation effect is obtained.

This treatment allows to achieve certain results which can vary from product to product, but they can be summarized as follows:

- An increase of the surface contact between the dispersed part and the suspension medium;
- An increase of the shelf life stability of the homogenized product (this is the already sought effect with the first patent in milk homogenisation);
- A viscosity variation tied with stability increase (therefore it is possible to avoid adding of additives into food products);
- A digestion improvement, together with better absorption of nutritional elements;
- enhancement of organoleptic properties of the product due to particles' micronisation.

A flavour emulsion is normally composed of vegetable oils which must be emulsified with the water; the oil droplets must be homogeneously dimensioned and included in a certain range that will ensure the strengthening effect of the emulsion, avoiding deposits and separation effects.