

Sugar Beet pectin: soluble fibre and emulsion stabilizer

Sugar Beet pectin is extracted from Sugar beet pulp and contains ferulic acid which is not present in other commercial pectin sources like citrus and apples. Ferulic acid is an organic compound. It is an abundant phenolic phytochemical found in plant cell walls. As a building block of lignocelluloses, such as pectin and lignin, ferulic acid is ubiquitous in the plant kingdom. Beet pectin contains approximately 0.6 – 3.0% of ferulic acid. It adds value in some applications like for instance bread, as crosslinks form between the source of ferulic acid and the gluten. It helps to improve the softness and anti-stalling performance and increases the protein content.

Sugar beet pectin has a lower molecular weight compared to citrus and apple pectin, which together with its higher content of neutral sugars and the ferulic acid gives this pectin a poor gelling ability. Also, beet pectin usually is medium methoxyl with a degree of esterification of only approximately 48%.

The higher molecular weight of citrus and apple pectin provides very high viscosity levels and higher water-binding capacity for these pectins, which is beneficial for gelling, thickening and mouth-feel. This strong swelling behaviour, however, also limits the amount of citrus or apple pectin that can be consumed as soluble fibre respectively added to some health products, beverages, sauces etc.

Beet pectin demonstrates a stabilizing effect on emulsions which is influenced by the accessibility of protein and ferulic acid groups to the surface of the oil droplets, the proportion of ester groups, and the molecular mass distribution of the fractions.

VIDOPECTINE EBS 00, the beet pectin of **UNIPEKTIN Ingredients AG**, is produced in Switzerland from local sugar beets after the extraction of sugar, it is commercially available as a free-flowing grey to light brown powder.

VIDOPECTINE EBS 00 is pure, undiluted pectin with a fibre content of min. 70 % (soluble fibres). The nutritional value is approx 140 kcal per g.

Stabilizing effect on emulsions



*Sunflower oil and water mix, before
and after beet pectin was added,
with mix heated to 50-55°C.*

Applications of VIDOPECTINE EBS 00 sugar beet pectin (from studies)

- For optimum results in bread, the inventors use beet pectin at a concentration of between 0.3 wt % and 0.65 wt %.
- Stable oil-in-water (O/W) emulsions were achieved by adding 3 ml of n-dodecane (43% final oil level) to 3 ml pectin solutions (0.5%, w/w)
- Emulsion sauces (as tomato sauce when tested) – 0.5% addition of beet pectin in the recipe
- In dairy products, mueslis, beverages, and health products, the quantity of beet pectin needed depends on the required effect and the specific product. Pure beet pectin is particularly suitable for fibre tablets or fibre blends consumed as a nutritional supplement as the swelling rate is low when consumed.



Beet pectin sprinkled over yogurt and cereal to increase the soluble fibre content

Health claims from EFSA/EC on pectin

EFSA/EC approved the two health claims below in 2014 as the clinical studies following the applications were considered relevant and proof of the effects. Those claims can be used for all commercial pectins.

1. Reduction of post-prandial glycemic responses (ID 786). EFSA considers the following wording reflects the scientific evidence: *“Consumption of pectin contributes to the reduction of the blood glucose rise after meals”*. To make a claim, at least 10 g of pectin per meal should be consumed.
2. Maintaining of normal blood cholesterol concentrations (ID 818). EFSA considers the following wording reflects the scientific evidence: *“Consumption of pectin contributes to the maintaining of normal blood cholesterol levels”*. To make a claim, at least 6 g pectin per day should be consumed.

Additionally, beet pectin ferments in higher proportions than e.g. citrus pectin, to acetate, a short-chain fatty acid known to protect the colon mucosa and rumen.

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