

Sodium Gluconate

- Cost saving stabiliser for meat emulsions
- Good bite and mouthfeel
- No compromise in colour, taste and safety
- Fits with sodium reduction strategies



Jungbunzlauer

Sodium Gluconate

Economical stabilisation for succulent sausages

Jungbunzlauer sodium gluconate stabilises meat emulsions in combination with phosphates by increasing water binding and protein solubility. As an economical stabiliser, it allows to reduce costs of emulsion type sausages like frankfurter, wiener and bratwurst without compromising quality and safety. With its limited sodium content, it further fits with sodium reduction strategies.



What is sodium gluconate?

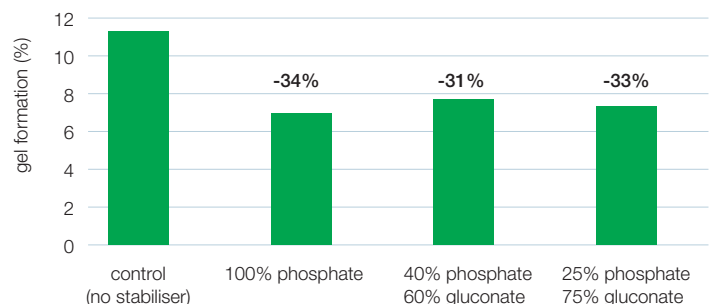
Jungbunzlauer sodium gluconate is the neutral sodium salt of gluconic acid, an organic acid obtained from glucose by fermentation. It is a US GRAS sequestrant and a EU quantum satis food additive (labelling: sodium gluconate or E 576). It is commercially available as a white, non-hygroscopic crystalline powder with a high solubility in water and a sodium content of approx. 10.6%. Sodium gluconate is also the key ingredient of sub4salt®, Jungbunzlauer's patented and award winning solution to reduce sodium.

Stabilisation of emulsion-type sausages

To avoid fat and gel formation, emulsion-type sausages are stabilised with salt and phosphates, sometimes also salts of organic acids, mainly citrates. Salt works by increasing the ionic strength, thus causing swelling and unfolding of the muscle proteins and making more sites available for water binding. Phosphates and citrates as polyelectrolytes do the same, but also raise the pH (and thus increase the negative surface charge of the proteins) and chelate divalent cations that would else build bridges between proteins and prevent their swelling. Phosphates further dissociate actomyosin into actin and myosin. All these processes favour water binding and protein solubility. The dissolved proteins in turn emulsify the fat particles giving the desired texture to the sausage.

Like phosphates and citrates, sodium gluconate increases the ionic strength, chelates divalent cations and increases the pH, thus stabilising sausage meat emulsions. Combinations of 75% sodium gluconate and 25% diphosphate form as little fat and gel in emulsion-type sausages as 100% diphosphate. However, the best texture is obtained with 60% sodium gluconate and 40% diphosphate. Colour and taste of the sausages are not affected by the use of sodium gluconate.

Gel formation in frankfurter sausages without and with 0.3% stabiliser



Applications and dosage

Sodium gluconate stabilises ideally emulsion-type sausages when used together with diphosphate in a ratio 60/40 and a total stabiliser concentration of 0.3%. In frankfurter and wiener type sausages, this combination provides a texture that is as firm and a bite that is as good as with phosphate alone, but at a significantly lower cost. In bratwurst, the combination even improves the perceived quality as the mouthfeel is less rubbery than with phosphate alone.

Consumer evaluation of bite and mouthfeel of frankfurter sausages with 0.3% stabiliser (n = 120, results in %)

	too soft	little too soft	ideal	little too firm	too firm
100% phosphate	0	16	70	13	1
40% phosphate 60% gluconate	3	24	65	6	2

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