

Jungbunzlauer

From nature to ingredients®



Meat Products

Meat products

Jungbunzlauer's comprehensive solutions for meat applications

Over recent decades, worldwide consumption of meat products has increased, creating new, strong-growth markets. Along with consumer expectations of safety and high-quality products, there is increasing focus on healthiness and naturalness. For the development of innovative meat products, Jungbunzlauer transforms nature's plants into outstanding solutions with a wide variety of possible applications.



Functionality is the key to success

Jungbunzlauer provides developers of the meat industry with support, expertise and a broad range of useful additives. In order to facilitate the selection of our various products, an overview of their basic functions is given below:

		Carcass	Cuts of meat and minced meat				Sausages		
		Surface	Fresh preparations	Raw cured	Cooked cured	Cooked uncured	Fresh / raw cured	Cooked cured	From cooked meat cured
Pre-treatment	Antimicrobial wash	Lactic Acid / Citric Acid							
	Acidification						Glucono-delta-Lactone		
Meat processing	Chopping aid						Trisodium Citrate / Tripotassium Citrate / Sodium Gluconate		
	Water binding and stabilisation						Sodium Gluconate / Xanthan Gum		
	Curing			sub4salt® cure / Xanthan Gum			sub4salt® cure / Xanthan Gum		
	Curing acceleration		Glucono-delta-Lactone / Citric Acid / Lactic Acid				Glucono-delta-Lactone / Citric Acid / Lactic Acid		
	Food safety and shelf life extension		Lactic Acid / Sodium Lactate / Potassium Lactate / Sodium Diacetate / Lactate/(Di)acetate Blends						
Sensory aspects	Colour stability		Trisodium Citrate					Trisodium Citrate / Lactate Blends	
	Firmness and sliceability						Glucono-delta-Lactone	Sodium Gluconate	
Health trends	Sodium reduction						Potassium Lactate Blends		
	Phosphate reduction						Sodium Gluconate		

Antimicrobial wash

Thanks to its antibacterial properties, **lactic acid** is frequently used in antimicrobial wash. After slaughtering the animal, a lactic acid solution with a concentration of up to 5% is sprayed onto the surface of the carcass at a temperature of about 55°C. This leads to a significant reduction of pathogenic microorganisms such as *E. coli* and salmonella. **Citric acid** as well as combinations of lactic and citric acids can also be used for this purpose. The acid-based antimicrobial intervention procedure supports good hygienic slaughtering practices and improves food safety by creating an additional hurdle against microbial growth.

In many countries of the world, lactic and citric acids can be used on all types of meat carcasses. In Europe, lactic acid is currently the sole permitted treatment and has been approved for use on beef carcasses since 2013.

Meat processing

Acidification

Acidification is essential for the coagulation of meat proteins in the production of raw sausages. Either food acids or starter cultures can be used for this purpose. The main advantage of acidification using **glucono-delta-lactone (GdL)** is that it is a fast, reproducible and well-controlled production process, resulting in a shorter ripening time.

From a sensory point of view, the use of GdL in raw sausages produces an acidic taste. However, spices can be added to achieve a more pleasant flavour.

Chopping aid for improved emulsification

Besides phosphates, citrates can be employed as a chopping aid in order to produce emulsified sausages. For example, the addition of **trisodium citrate** or **tripotassium citrate** to the meat leads to swelling of the protein and reduces loss of fluid. It adheres to the protein due to its ionic charge and leads to an increase in the water binding capacity. Additionally, it helps to maintain the pH within the desired range of the product.

Sodium gluconate can also be used as a chopping aid to improve the meat emulsion.





Curing

Curing is one of the oldest methods of meat preservation. Today, curing salt is still an essential ingredient for processed meat products. Consisting of sodium chloride and sodium nitrite, it provides several important functionalities and is used to improve the shelf life, texture, taste and colour of a product.

The benefits particular to curing salt are countered by its high sodium content and the risk of a high-sodium diet. **sub4salt® cure** is a combination of the widely used **sub4salt®** and sodium nitrite (0.5%/0.9%). **sub4salt® cure** combines the outstanding benefit of sodium reduction with the functionalities of a traditional curing salt without changing any physical or chemical properties of the end product. By using **sub4salt® cure**, it is possible to achieve a sodium reduction of 35% in the end product. **sub4salt® cure** can be applied to any curing system.

In aqueous brine solutions used for curing, **xanthan gum** is added for rheology control and stabilisation. Pickling solutions are either injected into cuts of meats by means of multiple needle injection pumping, or stitch or artery pumping, and can be optimised by the use of xanthan gum. Xanthan gum keeps the active ingredients in the required place in brine solutions or in the meat product so that they can fulfil their specific purpose. As a consequence, brine solutions with xanthan gum bring about an overall better tenderising effect, improved colour, better flavour and less shrinkage of the meat product. Moreover, an overall better product yield can be obtained due to xanthan gum's high water binding ability. Due to these enhanced properties, not only does the producer save money, consumers also have a more enjoyable culinary experience.

Water binding

The ability to bind water is mostly relevant for the manufacture of high-quality meat products. **Xanthan gum** can be used for this purpose in various kinds of processed meat products, e.g. boiled ham, cooked sausages, minced meat, meat batters, etc. The water binding capacity results from the chemical structure of xanthan gum. Due to its excellent solubility in water, it forms highly viscous and stable solutions at very low concentrations. Xanthan gum exceeds most of the commonly used gums in meat applications in terms of water binding capacity. **Sodium gluconate** can also act as a stabiliser in meat products, especially in emulsion-type sausages such as frankfurters. Here, it leads to an increase in the ionic strength and causes the muscle proteins to swell and unfold. As a result, the water binding capacity increases.



Acceleration of curing process

The acceleration of the curing process is vital in the production of raw sausages. In order to achieve this, acidification is necessary, which can be accomplished using either food acids or starter cultures. The primary advantage of utilising GdL for acidification is that it enables a fast, easily reproducible, and well-controlled production process, ultimately resulting in a shorter ripening time. From a sensory perspective, any acidic taste that may arise from the use of GdL in raw sausages can be effectively masked by adding spices. Moreover, from a microbiological standpoint, the combination of starter cultures and GdL ensures the production of a safe product by suppressing the growth of harmful pathogens like *Listeria* and spoilage bacteria, thus improving food safety.

In addition to GdL, **citric acid** and **lactic acid** also function as curing accelerators by reducing the pH level, thereby enhancing the formation of the desired red colour.



Food safety and shelf life extension

Jungbunzlauer offers a variety of solutions for increasing the safety and shelf life of processed meat products.

Sodium lactate, **potassium lactate**, as well as their blends with (di)acetates, are used as preservatives in order to meet today's quality requirements in terms of food safety and stability. Their main function is to inhibit the growth of microorganisms. Combinations of lactates and diacetates produce a synergistic effect for the control of pathogens and microbes in general.

Food safety requirements are addressed, with excellent *Listeria* control in hot dogs or poultry and pork ham, for example. In addition, the preservative effect leads to an extended product shelf life, resulting in reduced food waste.

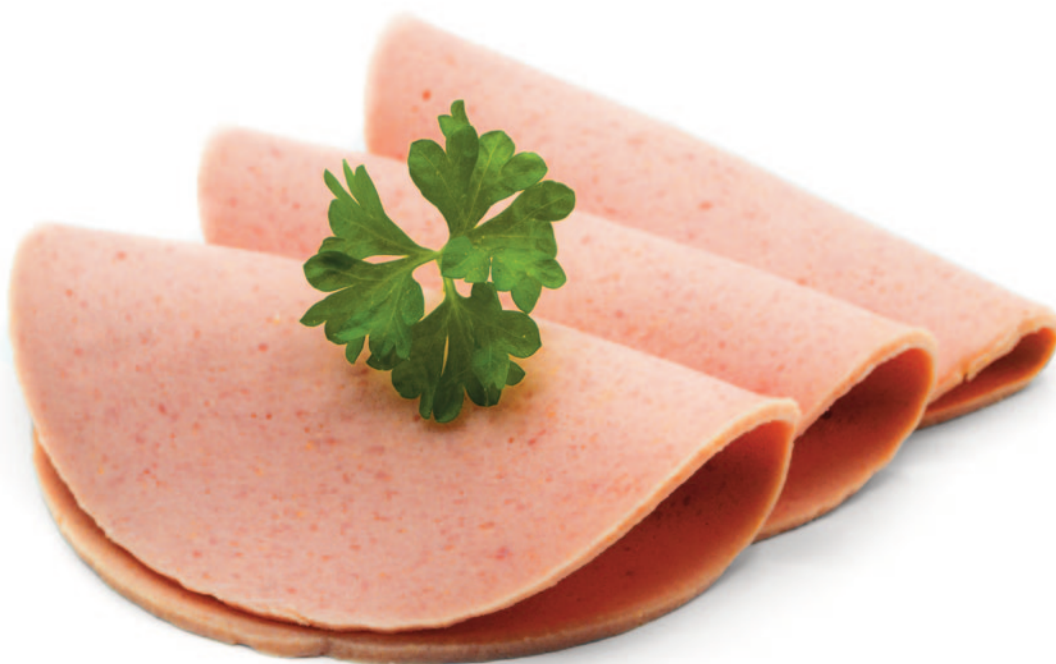
Lactate usage levels of 2 to 3% are efficient. **Lactate/(di)acetate blends** can even be used in concentrations below 2% without impairing antimicrobial performance. At the recommended usage levels there is no or even a positive influence on the sensory properties of the meat product, namely increased saltiness perception and improved overall taste acceptance with no bitterness from the potassium variants. Due to their lower incorporation rates, lactate blends are also less costly in use than pure lactates.

Sensory aspects

Colour stability

The colour of the meat is a crucial factor in customers' purchasing decisions, as a bright colour is often associated with freshness. Colour stability is influenced by the oxidation status of myoglobin and is also affected by temperature. Trisodium citrate can be added to fresh cuts of beef, lamb and pork to maintain their fresh colour during storage. Similarly, certain lactate blends have been found to help retain good colour in sliced bologna-type sausages during longer storage periods.

Jungbunzlauer ingredients can also be utilised to enhance colour development during meat curing. Most cooked sausages are cured to achieve the characteristic red colour, and GdL can promote the reaction between nitrite with meat myoglobin at a dosage level as low as 0.1 to 0.2%, resulting in the stable red colour typical of cured meat products. By using GdL to lower the pH, the formation of nitrous acid is expedited.



Firmness and sliceability

Sodium gluconate improves the sliceability of emulsion-type sausages such as frankfurters. Divalent cations such as iron, magnesium and calcium (from untreated water) have an impact on sliceability as they interact with the protein structure of sausages. Sodium gluconate can be used as a chelating agent to inhibit this phenomenon, thus improving the meat's structure.

In raw sausages that are acidified using **GdL**, the uniform coagulation of the meat proteins improves firmness and sliceability.

Conformity to food standards

Producers and customers are increasingly looking for high-quality products and credibility. The inspection by a neutral body of raw materials as to their compliance with common food standards meets these expectations by providing transparency. All our production sites are certified according to the criteria set out in ISO 9001 and have a Food Safety System Certification (FSSC) 22000:2010. This ISO-based certification scheme is internationally accepted and is recognised by the Global Food Safety Initiative (GFSI). Therefore, all producers seeking high-quality ingredients for their meat applications can rely on our products.

Health trends

Consumers are increasingly looking for ways to eat healthier. Jungbunzlauer offers food manufacturers customised solutions for creating healthier meat products without compromising on taste or functionality. In order to cater to the top health trends, Jungbunzlauer provides easy-to-use ingredients for reducing the sodium and phosphate content of food products.



Sodium reduction

Reducing sodium levels in meat products presents a considerable challenge, as it is essential to balance flavour, texture, and shelf life. Sodium lactate and potassium lactate are commonly utilised to achieve this reduction without compromising preservation or sensory qualities.

Sodium lactate and sodium-based lactate (di)acetate blends possess antimicrobial properties that help extend the shelf life of meat products by preventing the growth of spoilage bacteria and pathogens such as *Listeria*. Additionally, they enhance the overall flavour profile, though they do contain some sodium. For those looking to further reduce sodium content, potassium lactate/potassium (di)acetate blends are excellent alternatives. These options offer similar antimicrobial benefits to sodium-based counterparts but with significantly lower sodium levels. While the flavour and texture of the meat products are maintained, there may be a slight difference in taste compared to products containing sodium lactate and its blends.

Curing salt, used for *Listeria* control and shelf life extension, is one of the biggest contributors to the sodium content of processed meat products. Substituting sodium sources by potassium sources, such as **potassium lactate** or **potassium lactate/potassium (di)acetate blends**, can significantly reduce the sodium content of meat products.

Phosphate reduction

Besides sodium reduction of food, phosphate reduction is becoming increasingly important to health-conscious customers. Phosphates serve several functions in the production of emulsion-type sausages, e.g. as a stabiliser, but their health impact has become a matter of controversy. **Sodium gluconate** is a good alternative to phosphates. Trials have shown that a partial replacement of phosphates with sodium gluconate (up to 60%) improves the perceived quality. For example, the mouth feel of cooked ham was described as less rubbery compared to the standard ham with only phosphates at a typical dosage of 0.3%. Furthermore, no deficiency in terms of colour or taste was perceived when phosphates were partially replaced with sodium gluconate (up to 60%).

Sustainability

The intersection of sustainability and health trends, like sodium and phosphate reduction in meat products, underscores a major shift towards conscientious consumption practices. The drive towards reduced sodium and phosphate levels in meat aligns with broader public health goals, aiming to mitigate cardiovascular risks and promote overall well-being. In addition to health aspects, Jungbunzlauer's broad product portfolio also offers solutions that allow for a more responsible consumption by reducing food waste through shelf life extension of meat products. Through sustainable practices and healthier formulations in meat production, we can all support a more harmonious relationship with our environment and prioritise the long-term health of both individuals and the planet.

Sustainability is a keystone of Jungbunzlauer's strategy and value proposition. Jungbunzlauer ingredients are manufactured through natural fermentation from renewable raw materials. With a long history of calculating carbon footprints and implementing sustainability initiatives, Jungbunzlauer has set ambitious emission reduction targets and committed to SBTi in 2021. This includes measuring environmental parameters such as greenhouse gas emissions and water consumption, which are also disclosed in the annual sustainability report.

Jungbunzlauer Group

Jungbunzlauer is represented in all major markets. Our global network of sales companies and distributors covers more than 130 countries.

North America

Europe (incl. Africa and Middle East)



- SALES OFFICE
- PRODUCTION SITE

- PRODUCTION SITE / SALES OFFICE
- APPLICATION TECHNOLOGY CENTER

Jungbunzlauer is a world leading producer of biodegradable ingredients of natural origin. The Swiss-based, international company's roots date back to 1867. Today, Jungbunzlauer specialises in citric acid, biogums, gluconates, lactics, specialties, special salts and sweeteners for the food, beverage, pharmaceutical and cosmetic industry as well as for various other industrial applications.

Jungbunzlauer's products are manufactured using natural fermentation processes, based on renewable raw materials.

All our products can be used, transported and disposed of in a secure and ecologically safe way. The Group operates manufacturing plants in Austria, Canada, France and Germany.

A worldwide network of sales companies and distributors with a thorough understanding of target markets and client requirements underlies Jungbunzlauer's strong market and customer focus. Committed to its rigorous quality standards, Jungbunzlauer guarantees for the excellence and sustainability of its products and services.

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