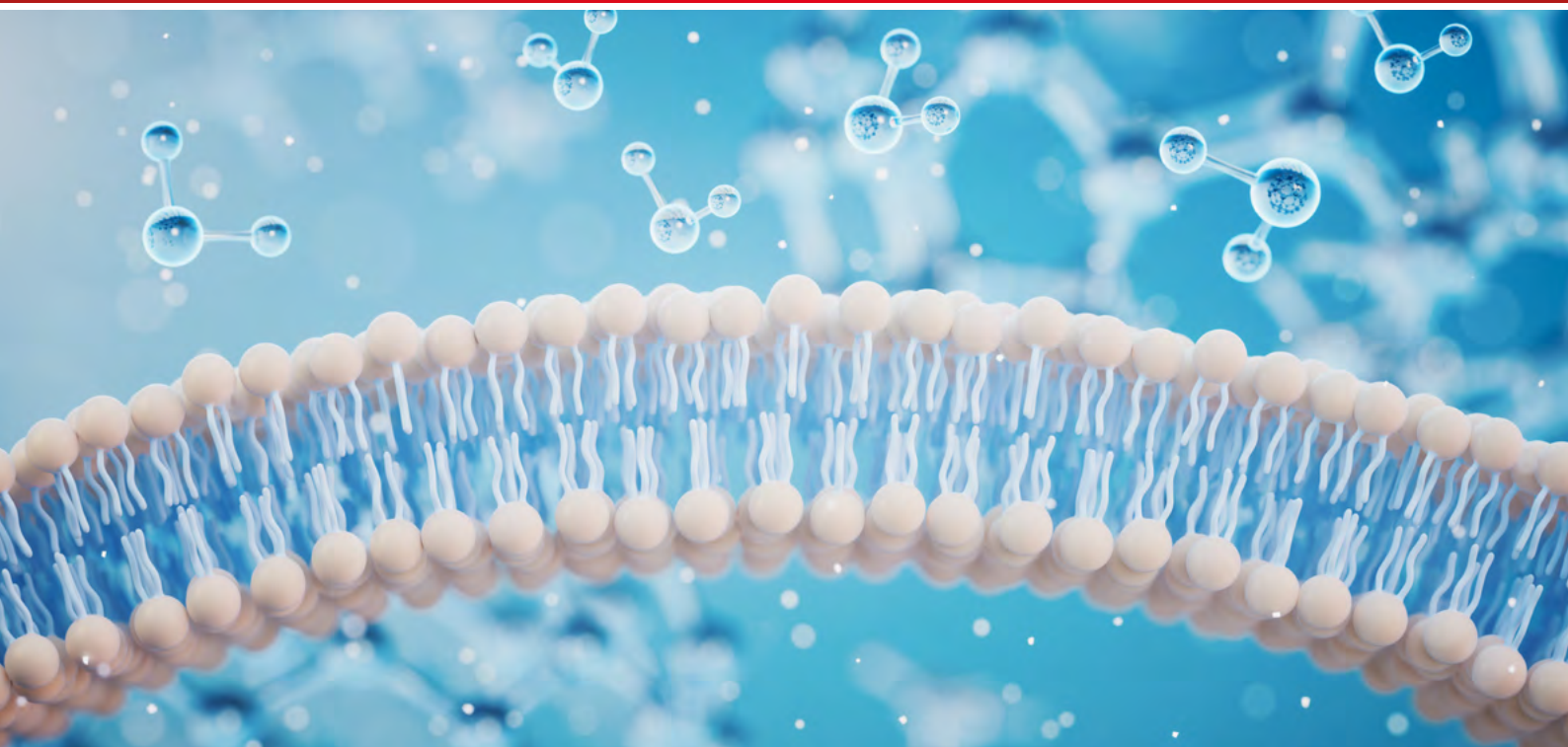


Product brochure

Choline Chloride

Most important pro vitamin in animal nutrition



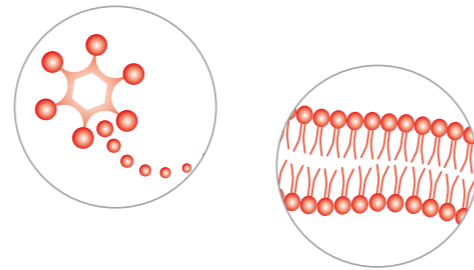
Choline Chloride

How does it work

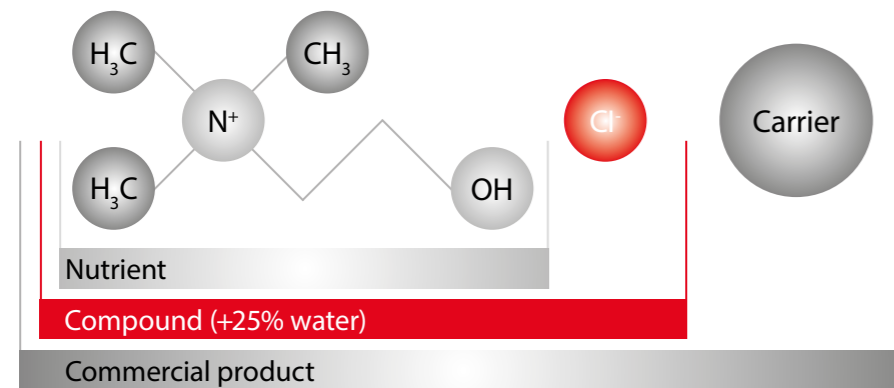
Choline Chloride is a Pro-Vitamin, which can also be found under the former names Vitamin B4, Vitamin B7 or Gossypine. It is present in nearly all feed stuffs but with different bioavailability's (e.g. Rapeseed 25% and Soyabean meal up to 70%). Many animals can manufacture it in the liver by themselves from methionine with the aid of folacin and Vitamin B12. Nonetheless, to support the metabolism of farm animals, it is today's standard to supply additional choline chloride via the feed.

Main Functions of Choline Chloride

- Phosphor-lipid precursor and therefore essential for building and maintain cell structure
- Important to fat metabolisms in liver. It is a lipotropic factor and thus prevents abnormal accumulation of fat in the liver or accelerates its removal
- Crucial in formation of acetyl choline, for nerve impulse transmission
- It acts as methyl-group donor
- It will increase growth rate and feed conversion ratio, especially in high fat diets



Forms of choline, Nutrient, compound and commercial product



Besides natural bound choline inside for instance lecithins or other organic raw materials (e.g. rapeseed, soybean) the most important source of choline are synthetic additives. For the evaluation of this commercially used choline additives, it is important to know which sources are available and what are their differences. First of all, the nutrient choline is not equal to the commercially available product (classification see figure 1).

Choline itself is a charged molecule (charged at trimethyl amino group) and will therefore always occur naturally with a counterion. This counterion with highest relevance is chloride but also hydroxy ions, tartrate and citrates are used to obtain the corresponding choline bitartrate or citrate. However, choline coming from choline chloride is the most important source in use. Therefore, focus should lie on this.

Facts

Choline chloride is a very hygroscopic molecule and due to production process, its "purest" commercially available form is a liquid water solution with around 70-75% of choline chloride, giving a choline content of up to 56%. This liquid solution is then sprayed onto a plant based carrier. For this MIAVIT is exclusively using GMO free wheat bran from local feed industry. Finally, a subsequent drying process will lead to a high concentrated solid choline chloride with 25-70% choline chloride content.

But even in this form choline chloride is still very hygroscopic, which makes it hard to handle and prone to lumping and caking. This is why MIAVIT has optimised the carrier recipe and production process, to obtain a unique highly stable and easy to handle product, with best free flowing abilities.

Another quality based on silica as a single carrier is available, with a choline chloride content of 50%. Last but not least choline is also bound inside other biomolecules as for instance phosphatidylcholine from lecithin. But the overall choline content in this raw material is quite low, high in price and therefore neglectable for the supply of choline due to use in premixes.

MIAVIT Choline Chloride Products

- 50% Choline chloride
Silicium Dioxid as carrier
- 60% Choline chloride
Wheat bran as carrier
- 70% Choline chloride
Wheat bran as carrier



Quality Assurance

Constant quality management is key in MIAVIT production processes. Already before the production process we will monitor raw material quality consequently. After production process we will investigate the final product quality with the same accuracy. In the case of MIAVIT Choline chloride products we don't rely on the content of Chloride only, but we also analyse on the real content of Choline. Therefore, we analyse our MIAVIT Choline Chloride products with Method VDLUFA III 13.6.1 to get clear view about extractable pure choline chloride content. Of course, all MIAVIT Choline Chloride products are monitored regularly for Trimethylamine and Ethylene Oxide contamination to be conform to current EU legislation.

The art of mixture.



Why MIAVIT?

- supplier of innovative, high-quality products
- transparent, reliable partner
- flexible, fast and customer-oriented personal consultation
- improvement in the quality of life of animals and humans
- support for customer specific products

MIAVIT



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