

Tocopherols in fats and oils: preserving valuable nutrients

Nutriswiss uses innovative processes to protect natural vitamins and antioxidants

Lyss/Switzerland, October 2024 – Edible fats and oils are rich in natural nutrients, but traditional refining can reduce their levels substantially. A gentle new process developed by Nutriswiss AG, the Swiss specialist for high-quality, customised edible fats, not only preserves these valuable ingredients but also improves their stability and purity. The protection of valuable ingredients such as vitamin E and unsaturated fatty acids is particularly important when refining lipids for infant formula. Nutriswiss studies show that its innovative distillation technology produces raffinates with a higher vitamin content and better shelf life than conventional deodorisation.

Mild distillation technologies can be used to efficiently remove or significantly reduce impurities in fats and oils. However, it is important that product quality remains stable or is better than that achieved via conventional processes. Nutriswiss has therefore conducted extensive tests to determine the ideal process parameters to meet this goal. Mild distillation is ideal for sensitive raw materials such as omega-3-rich seed oils, including rapeseed and linseed, as well as algae and other speciality oils. Finding the right blend and quality of oils, especially for infant formula, is a major challenge, not only because the fatty acid profile must be optimally balanced, but also because the raw materials must meet the highest quality guidelines and strict specifications for harmful substances. Such oils require customised treatment and a higher degree of care than ordinary oils in order to preserve essential fatty acids and micronutrients such as vitamins. Tocopherols, commonly known as vitamin E, are categorised into four forms: α - and β -tocopherols provide the highest vitamin functionality, while γ - and δ -tocopherols have a low vitamin content but strong antioxidant properties. All four forms are present in vegetable oils in varying concentrations.

Controlled processing for optimum vitamin retention

During refining, a proportion of natural vitamins and antioxidants are generally degraded or removed to varying degrees at different stages. Traditional physical refining with steam distillation to separate free fatty acids has an impact here. Although mild distillation also reduces antioxidants and fatty acids, it is much gentler on the product than deodorisation. Experiments have shown that while tocopherols are lost through separation or oxidation, it is possible to regenerate or even increase tocopherol content with careful processing. Nutriswiss is making good use of these findings. Whereas

in the past, up to 50% of tocopherols were lost and no longer present in the end product, it is now possible to achieve zero or significantly lower losses. Frank Möllering, Head of Research & Development at Nutriswiss, sees great potential: "Our optimised process shows positive results with all oils and that is a clear technological advantage for us. By considering differing raw material properties and managing the balancing act between weak and intensive treatment, we have succeeded in retaining higher levels of natural vitamin E and removing undesirable substances without compromising the stability of the end product."

As a result, the new Nutriswiss process generally achieves higher or the same tocopherol content as traditional physical refining. There is a greater reduction in contaminants and formation of harmful 3-MCPD and glycidyl fatty acid esters is avoided.

About Nutriswiss

Nutriswiss AG specializes in the refinement of high-quality, customized edible fats and is the Swiss market leader for specialty and organic products. For more information on the company's sustainable mission statement "Refined in a sophisticated way", visit: <https://www.nutriswiss.ch/en/sustainability/think-about-tomorrow-today>

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