

TRANSFORMING TREATS WITH TAGS

Frank Möllering, Head of Research & Development at Nutriswiss, explains how Nutriswiss is revolutionising confectionery and bakery production with innovative, organic-quality structured triglycerides (TAGs)



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CAN YOU EXPLAIN THE KEY BENEFITS OF USING CUSTOMISED STRUCTURED TRIGLYCERIDES (TAGS) IN CONFECTIONERY AND BAKERY APPLICATIONS?

With the development of customised structured triglycerides (TAGs) in organic quality we found a way to manufacture and supply natural fats whose functional properties can be adjusted for specific applications using gentle methods. TAGs can be used in numerous ways such as filling fats with optimum melting behaviour for bars, chocolates, and bakery products.

WHAT INSPIRED NUTRISWISS TO FOCUS ON ORGANIC-QUALITY TAGS, AND HOW DOES THIS ALIGN WITH THE CURRENT MARKET DEMAND FOR CLEANER, SUSTAINABLE INGREDIENTS?

Palm fat has perfect technological properties for use in chocolate products. When replaced by other vegetable oils or fats, characteristics such as flavour, consistency and stability may all be adversely affected. This is why the Nutriswiss team creates customised recipes that optimise the final product and take the manufacturing process into account at the same time. Until now, the selection for such alternatives in organic quality has been limited. This is mainly because substitutes could only be produced using non-organic processes and, perhaps because manufacturers were reluctant to give up the

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technological advantages of existing production lines. To overcome these issues, we have developed an innovative process to create palm oil-free solutions that meet the highest quality standards.

IN WHAT WAYS CAN TAGS REPLACE TRADITIONAL PALM FAT IN BAKERY AND CONFECTIONERY PRODUCTS, AND WHAT IMPACT DOES THIS HAVE ON THE FINAL PRODUCT?

For example, TAGs can be used to replace palm fat in confectionery and baked goods with certified organic vegetable alternatives such as shea butter, cocoa butter, or coconut fat. We develop tailor-made TAGs for all sorts of confectionery and bakery applications. They can be used in filling fats for bars and chocolates that subsequently deliver the required melt-in-the-mouth behaviour. Nuts, nut oils and/or milk fat can be incorporated and, despite their delicate melting properties, the resulting fat creations have good temperature stability and prevent migration and fat bloom. That's not all, for creamy (chocolate)

fillings (croissants, bakery), for spreads, glazes and to garnish biscuits, variants based on cocoa or shea butter with sunflower oil, for example, can also be prepared without tempering. Finally, in bakery applications, chocolate-covered biscuits can be made with a TAG-based glaze that shows good drying/lightening characteristics and doesn't smear on contact. Cake toppings and even pastry – both short crust and laminated – almost everything is possible. The field is wide open and there will be many more customized solutions based on TAGs to come as every single formulation we develop for the food industry teaches us more about controlling the process.

COULD YOU DISCUSS HOW TAGS PROVIDE A MORE SUSTAINABLE ALTERNATIVE TO CONVENTIONAL FATS AND OILS, PARTICULARLY IN TERMS OF THEIR ENVIRONMENTAL FOOTPRINT?

All the palm oil we use is sustainably sourced and RSPO-SG certified. At Nutriswiss, we are strongly committed to



organic quality and are a founding member of the Palmoil Network Switzerland. However, we are also aware of the importance of offering alternative solutions and responding to consumer needs. Market supply was another major driver behind our determination to find a palm oil alternative. With limited availability of organic palm oil, we have been approached by companies wanting to buy up practically all available stock. In terms of being able to satisfy demand alone, we needed to find alternative raw materials. Despite its recognised RSPO certification, palm fat does not have a good reputation among consumers. As a result, many manufacturers of chocolate products are looking for alternative formulations.

WHAT ARE THE MAIN CHALLENGES YOU FACED IN DEVELOPING TAGS THAT MATCH THE MELTING BEHAVIOUR REQUIRED FOR USE IN BARS AND CHOCOLATES?

Existing alternatives were limited by various drawbacks. For instance, cocoa butter has excellent qualities and is widely accepted by consumers. But its triglyceride structures must be altered to achieve that melt-in-the-mouth texture that we all associate with the best quality products. As you know, this is usually achieved by controlled crystallisation via conching, which is complex and time-consuming. Instead of conching, cocoa butter TAGs can be modified by fat fractionation and hydrogenation of unsaturated fatty acids to produce fat components with better melting properties. But this is still criticized and not permitted at all under organic criteria. Using cocoa butter or coconut oil can also cause issues with eutectic behaviour, affecting the quality and the flavour of the product.

HOW DO TAGS COMPARE TO TRADITIONAL MILK AND BUTTER FATS IN TERMS OF TASTE, TEXTURE, AND OVERALL FUNCTIONALITY IN VEGAN AND VEGETARIAN BAKED GOODS?

The restructured TAGs are easy for manufacturers to process, and as well as being organic, another big 'plus' is that because they are dairy-free, they are an attractive alternative to milk and butter fats in vegetarian and vegan baked goods. They replace dairy products in butter creams for cakes and cupcakes, which retain the desired firm structure on the plate even when not refrigerated. Structured TAGs can also be used as an alternative to palm fractions in leavening fats for laminated or puff pastry.

CAN YOU WALK US THROUGH THE "GENTLE METHODS" NUTRISWISS USES TO CUSTOMISE TAGS AND HOW THEY CONTRIBUTE TO MAINTAINING THE NUTRITIONAL AND SENSORY QUALITIES OF THE FATS?

The triglycerides can be restructured with the help of various steps in an innovative process sequence. This results in different physical properties that enhance the crystallisation behaviour and ensure the desired soft and creamy mouthfeel. We discovered precisely how to control the process and how to combine certain oils and fats to create customised recipes. The matrix formed by the recombination of the fatty acids binds the oils, resulting in stable sensory properties with an organoleptically appealing melting behaviour. The secret lies in the gentle distillation that Nutriswiss applies to carefully selected oils and fats, including plant seed oils, cocoa butter, shea butter and lauric fats, to create TAGs with optimal structures for each recipe. Only the highest quality raw

materials are used, with natural enzymes utilised in some cases to replace certain fatty acids in the TAG molecules with others. Particular attention is paid to the choice of enzymes to guarantee organic quality. But we are also capable of restructuring organic certified triglycerides without using any enzymes.

WHAT ROLE DOES THE CHOICE OF VEGETABLE FATS, SUCH AS SHEA BUTTER, COCOA BUTTER, OR COCONUT FAT, PLAY IN ACHIEVING THE DESIRED FUNCTIONALITY FOR DIFFERENT PRODUCT TYPES?

There are some organic-certified solutions available in the form of fractionated fats. However, pure substitutes of palm fat with the named alternatives generally involve a loss of flavour and there are issues with eutectic behaviour (especially with cocoa butter and coconut). By using TAGs, manufacturers gain a lot of flexibility, especially in the organic sector. The times of just milk fat, pure coconut fat or pure cocoa butter have given way to tailor-made solutions that deliver the great taste and mouthfeel customers expect when eating high quality confectionery. The right choice and combination of oils and fats enables us to offer an alternative to palm oil and its

fractions for practically every area of application. The focus here is on physical properties and fatty acid composition of the source materials.

HOW DOES NUTRISWISS ENVISION THE FUTURE OF STRUCTURED TRIGLYCERIDES IN THE FOOD INDUSTRY, PARTICULARLY WITH THE INCREASING CONSUMER PREFERENCE FOR ORGANIC AND PLANT-BASED OPTIONS?

Demand for sustainable chocolate, bakery and sweets is growing. As a specialist in the purification of oils and fats, refining a wide range of oils for the food, pharmaceutical and cosmetic industries we are well aware that quality of fats and oils starts at the source of the raw materials. In order to avoid any negative impact on the product, Nutriswiss has therefore established its

own very strict standards. Raw materials for Nutriswiss are responsibly sourced and filled into ISO containers in the country of origin in accordance with food-grade standards, sealed and then transported directly to our refining plant. Approximately 85 % of the oils and fats refined and supplied by Nutriswiss are plant-based and a rapidly growing proportion of these is organic. This reflects the current and future market demand of the high-quality segment we serve. We are also experts for deodorizing and refining cocoa butter provided by our customers, e.g. for white chocolates in organic and non-organic quality. In terms of applications, the Nutriswiss TAGs open up a wealth of possibilities and are a real breakthrough. They are so versatile in use that there are virtually no limits to what can be achieved when they are in the hands of imaginative bakers and confectioners

ARE THERE ANY UPCOMING PROJECTS OR COLLABORATIONS THAT NUTRISWISS IS PURSUING TO FURTHER INNOVATE WITHIN THE STRUCTURED TRIGLYCERIDES AND FUNCTIONAL FATS SPACE?

Our R&D team is on hand to help develop sustainable and environmentally friendly solutions for the industry's products. Thanks to the newly developed processes, we can now also produce fats that significantly exceed the hardness and melting point of palm stearin, for example, so that they can be used for coatings and similar applications.



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