

Customized Organic TAGs: for Perfect Palm Oil-free Chocolate, Confectionery and Bakery

While palm oil offers technical advantages for producers of chocolate, confectionery and bakery items, many consumers are still sceptical about by products that contain it. But thanks to an innovative new processing technique from edible oils expert Nutriswiss, it is possible to source top quality organic alternatives with no compromise on product enjoyment.

Switzerland has been famed for its chocolate ever since François-Louis Cailler mechanized its production and opened the world's first chocolate factory in Vevey, on the shores of Lake Geneva, in 1819. Back in those days, Swiss chocolate wasn't what it is today (it tended to be bitter and grainy), but Cailler demonstrated the country's pioneering spirit.

He was followed by names like Suchard, Nestlé, Lindt and Tobler, and the innovations continued until the country's reputation for excellence was firmly cemented around the world.

This quest for excellence continues in Switzerland today, and it can be seen in the latest innovation from Nutriswiss AG, that offers a solution to a currently important challenge in the chocolate, confectionery, and bakery industry – how to replace palm oil with an easy-to-use alternative that delivers delicious results.

Market demand – and supply

Although sustainable production of palm oil has improved in recent years, shoppers are still sceptical about purchasing products that contain it, especially if it appears that the palm oil has been obtained at the detriment of the environment. As a leading expert in edible oils and fats, Nutriswiss is regularly approached by customers looking for an alternative. “Palm oil-free filling fats, glaze masses and sweet spreads are now among the most frequent requests we receive from customers,” says Frank Möllering, the company's Head of R&D.

Palm oil possesses the perfect technological attributes for chocolate products and baked goods, and the company is keen to point out that it is not against its use per se – but the source has to be right. “All the palm oil we use is sustainably sourced and RSPO-SG certified,” explains Möllering. “We are strongly committed to organic quality and are a founding member of the Palmoil Net-



work Switzerland. However, we are also aware of the importance of offering alternative solutions and responding to the needs of consumers.”

Market supply was another major driver behind the Nutriswiss R&D team's determination to find a palm oil alternative. With limited availability of organic palm oil, Nutriswiss has 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,” says Möllering.

Existing alternatives were limited by various drawbacks. For instance, cocoa butter has excellent qualities and is widely accepted by consumers. But its triglyceride (TAG) structures have to be altered to achieve that melt-in-the-mouth texture that we all associate with the best quality products. This is usually achieved by a process of controlled crystallization or conching (incidentally also invented in Switzerland in the 1800s), but this 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. Although today's complete hydrogenation contains practically no trans



fatty acids, it is criticised, especially in dietary fats. Under organic criteria it is not permitted at all. Using cocoa butter or coconut oil can also cause issues with eutectic behaviour, affecting the quality and the flavor of the end product.

A novel alternative

The Nutriswiss solution has no impact on end product quality or flavor, however: that prospect was unthinkable for the Swiss company. Chocolate fillings and spreads, for instance, derive their creaminess and the desired melting texture from their fat components. As Möllering elaborates: “Composition is crucial here. The end product should melt gently in the mouth and not be waxy or too firm.”

Thus, the company has rigorously tested its innovative new process, which has been proven to deliver outstanding results and can be used to develop tailor-made TAGs for all sorts of confectionery and bakery applications, from chocolate bars and luxury chocolates to bakery fillings, cake toppings, glazes, spreads and even pastry – both shortcrust and laminated. “With the help of various steps within a special process sequence, we are able to restructure the TAGs to give them different physical properties that enhance crystallisation behaviour and ensure the desired soft and creamy mouthfeel for delicious results,” explains Möllering.

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 in order to guarantee organic quality (e.g. only bio-compatible, explicitly authorized, non-GMA enzymes from natural sources are used). All production facilities and processes comply with the strictest organic quality standards and, as with all of its ingredients, Nutriswiss operates secure, traceable supply chains from the producer to its production plants.

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 naturally high in vegetarian and vegan appeal.

Endless possibilities

In terms of applications, the Nutriswiss TAGs open up a wealth of possibilities. For instance, customised cocoa butter or coconut fats can be used to create top quality, stable bakery fillings with excellent melting properties and significantly less fat migration than occurs when using standard cocoa butter or coconut fats. Being more temperature stable than regular coconut fat, they can replace palm fats and palm oil fractions such as stearin in pastry fillings, and they can be used as an alternative to palm fractions in leavening fats for laminated or puff pastry.

The customized TAGs also work perfectly in filling creams for roulades and sponge rolls, which require a stable fat phase during filling due to their airy and fluffy consistency. They are ideal too for making buttercreams for cakes and cupcakes, with end results retaining the desirable firm structure on the plate, even when they are not refrigerated.

Glazes are a piece of cake too, with the customized TAGs exhibiting fast crystallization without the need for conching, and good levelling behavior during processing. This means they run smoothly on cakes and biscuits and solidify quickly enough in just the right thickness. During subsequent portioning of the pieces or in the packaging on the way to the consumer, it is important that glazes don’t smear or oil out – they need to stay perfect throughout, without forming a greasy film and melting only when reaching the mouth. As well as ticking this box, the specially customised TAGs can also be used in long-life shortcrust pastry goods as an alternative to palm oil or dairy butter.

In the confectionery sector, Nutriswiss TAGs offer significant benefits too. They are perfect for glazes and couvertures with rapid crystallization, and they can be used in fillings for bars and chocolates that deliver the required indulgent melt-in-the-mouth behavior. Nuts, nut oils and/or milk fat can be incorporated into recipes and, despite their delicate melting behavior, the resulting creations have good temperature stability with no oil migration or fat bloom. The customized TAGs also offer additional flexibility for makers operating in the organic sector, whose options have until now been relatively limited. Importantly, there is no eutectic behaviour as if the case with cocoa butter, for instance.

“Our customized TAGs are a real breakthrough,” says Möllering. “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.” fmt

For more information:
www.nutriswiss.com

