

Knowledge Zone

Replacers can prove a good alternative to egg, milk and cream in bakery, offering numerous advantages, says Andrew Don

Earlier this year, *British Baker* reported how Memory Lane Cakes and Kensey Foods products had to be pulled off shelves, because German eggs had been used that risked containing illegal levels of dioxin. For those in the egg replacers market this helped greatly to validate their argument about the food safety benefits of egg replacers.

The advantages of replacers vary from product to product, but Gill Bullock, marketing manager of Orchard Valley Foods' OvoLact 34, an egg alternative derived from milk for cake batters, cites benefits such as: lower cost; less staling over shelf-life; suitability for lower-fat and lower-cholesterol recipes; reduction in the impact of egg quality variations; a creamy flavour and texture; simplicity of use; and clean label.

Eradicating additives is the Holy Grail, according to Judith Ferguson, research and development manager at Pritchitts. She says the trend to all things natural is an industry "challenge" because natural is exactly how eggs are perceived.

Arla Foods says its milk-based egg replacement is 100% natural with no E numbers, soya, fillers, lecithin, gums or starch. John Gelley, Arla's sales manager for the UK and Ireland, says: "When you talk to people about egg replacement, they automatically think about things made cheaper rather than the quality issues."

Arla believes it has changed all that because of its investment in filtration techniques as far down as ultra-filtration and nano-filtration in cheese manufacture, which Gelley says enables Arla to offer "a 100% natural replacement for egg in most bakery applications that replaces the function of whole egg with the functionality of milk product". It is not suitable for vegans because it is an animal by-product, but there are no additives in it. However, Arla offers one that is suitable for vegetarians and one that contains animal rennet, which is not.

Gelley says many egg replacers have historically been extenders rather than replacers. He explains that, in the past, products have extended the egg used by 10%, using starch or gums. And replacement products were in the form of mixtures that would make the end product cheaper, but possibly not as good.

Different styles

Today, egg replacers in the baking industry can be divided into those derived from dairy, from wheat and from soya. Milk and cream replacers can be derived from a variety of base ingredients to replicate the particular needs of differing applications. The main constituents will be derivatives of dairy or vegetable oils.

Players in the replacers market include Ulrick & Short, Arla, Fayrefield Foodtec, Macphie, Puratos, Zeelandia, Pritchitts, Rich Products and Orchard Valley Foods. The industry uses replacers to save costs and, they would argue, to deliver health, logistical and energy-saving benefits.

Arla's Gelley says cost reduction can now be achieved without loss of product quality, because 50% of the eggs used may be replaced with Arla milk proteins – the recipe will still be made with eggs but not as many. He adds that Arla can offer tailor-made solutions to suit all kinds of applications. He says: "You wouldn't want the same formula in a meringue as in a Christmas cake, because you would not want the cake full of air."

Gelley says Arla is continuously developing and testing new products. "As the market changes, we need to stay ahead to ensure our

Stand-in actors

Clockwise from above: different formulas are used for meringues than for cakes; Fayrefield Foodtec has developed dairy-based egg replacements under the Gelltec brand and milk replacers under the DairyTec brand; Macphie's Cock-a-Leekie pie



"As the market changes, we need to stay ahead to ensure our products will continue to work with new and different raw materials, such as enzymes, for example"

products will continue to work with new and different raw materials, such as enzymes for example. He suggests that, for an average cake recipe, only half of the eggs should be removed and, in this case, Arla aims to reduce the cost of this by around 25%. The savings are increased against the use of more costly free-range eggs. The "cost containment" is more prevalent when it is a partial replacement: "It helps contain costs when commodities rise in price," Gelley says.

Macphie, which produces both dairy cream and egg alternatives, says its cream alternatives are a more cost-effective option because they whip up to about four times the original volume compared with dairy cream. The company, which has brands such as Mactop Extra, Glendelight, Double C and Macfil alternatives, has made non-hydrogenated versions available, towards which it says there has been an increasing move.

Steve Timms, managing director of Fayrefield Foodtec, which developed dairy-based egg replacements under the Gelfec brand, and milk replacers under the DairyTec brand, says each has different characteristics and the precise application will determine effectiveness.

An egg glaze can give croissants, scones, pies, pastries and slices products an appearance that shouts "eat me" in a bakery shop window. Rob Little, a business development manager at Shine Glaze supplier Pritchitts, says: "Some like their scones rustic-looking and flour-covered but many prefer them with a shiny, eggy gloss... it's the showroom shine effect," he says.

Powder, paste or liquid

The egg replacers market includes powder or paste solutions and liquid. Powder or paste are not particularly convenient, because they have to be mixed thoroughly and prepared. They are also messy and potentially damaging to spraying or spinning disk applicator machinery if not dissolved correctly. Pritchitt's Shine Glaze, which is aseptically packed and delivered and stored ambient, "is considerably more hygienic than using egg products which provide the perfect condition for bacterial growth," Little claims.

Egg, milk and cream replacers are just the tip of the iceberg, however. Ulrick & Short, the Easiglaze and Ovaprox company, for example, has fat replacers and phosphate alternatives in its range.

The egg industry is naturally unimpressed. Clive Frampton, chairman of British Lion Egg Processors, says: "Unlike egg products, egg replacement products may contain a host of different ingredients and additives, which are required to be included on the product label. Surprisingly, some egg replacers actually also contain egg white, so cannot be used as an ingredient in egg-free products, including those produced for vegans." Also, egg replacers were often more expensive than natural egg and, while they could perform well in some circumstances, they did not work consistently well across all products, so it was better to use the real thing, he argues.

However, the egg industry will find itself up against the Welfare of Laying Hens Directive, which comes in at the beginning of next year - legislation that could see egg prices skyrocket. The Directive will outlaw the use of battery farming methods in the production of eggs and chickens and require egg producers using caged hens to keep them in more spacious cages with extra facilities.

It is thought many egg producers could go out of business because it will not be viable for all to make the necessary production changes to meet the new regulations. While the British Lion Egg Processors claim the UK is on track to meet the new rules, which kick in from January 2012, there are huge concerns over whether the rest of Europe - where many bakeries source their eggs - is up to speed. Fayrefield Foodtec's Steve Timms says: "The effect this will have on egg prices is not exactly known but it is safe to say that prices will rise, possibly dramatically." Timms says canny manufacturers are now looking at increasing the use of egg replacers in anticipation, because availability will be a distinct advantage. A potential cost spike needs to be weighed up against the pros and cons of switching from eggs to replacers. □