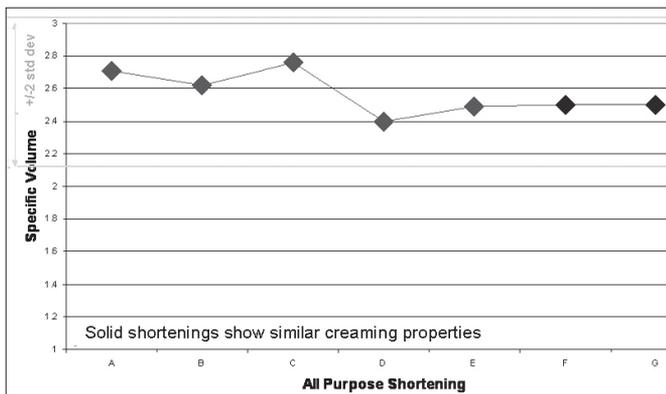
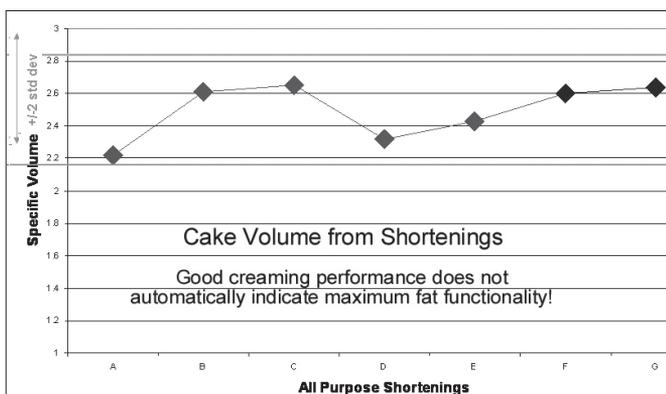


We also looked at the creaming of shortenings because you are talking about a big difference in saturated fat levels across the range. It does look as if there is a trend towards a better creaming from the higher saturated-fat shortenings, which also have higher solid fat levels. The differences in these specific volume values are however, when you look closely, fairly insignificant, meaning that they are all very similar. This sort of deviation you could expect to see on a week on week basis with any particular shortening, because the ingredients that are used in its formulation all from natural sources.



We also looked at cake volumes from shortenings. You can see cake performance is a different story. It's easy to get good creaming results by putting higher levels of palm oil. But what can happen if the level is too high is that you start to get lumpy textures over time, because palm oil is prone to post hardening. This will particularly come through in cr mes and products that aren't being baked. You also tend to find that the cakes made from fats with high palm levels have drier eating characteristics and lower volume. So where you initially start off with a good volume from creaming it doesn't necessarily follow through in the bake.



Summary On Shortenings All purpose shortenings used in cakes, pastries, cr mes and some biscuits have similar functionality when they contain between 30-50% saturated fat, which is quite a big range. Reductions in saturated fat which meet the expected FSA targets for cakes, and even more for short pastry, can therefore be achieved by changing lower saturated fat brands of shortening. A reduction of 30% saturated fat in your product, which may allow a reduced saturated fat claim, can be achieved if you are either changing from a high saturated fat boxed shortening to one of the lower saturated fat brands, or by changing to fluid shortenings, if your production process and logistics allows the use of a fluid shortening.

Cake margarines I'll just talk very briefly about cake margarines, which contain 80 – 82% fat, water and generally may also contain milk solids, flavour, colour, salt and emulsifier but the final specification depends on individual customer's requirements. Much of what was said on shortenings is also applicable to cake margarines since they are made from similar oil blends. Cake margarines tend to be used instead of shortenings in cakes for historical reasons, generally because margarine was always seen as a butter alternative and margarine may be preferred on the product ingredient list to vegetable oils. Depending on their specification, cake margarines can add flavour, colour, emulsifier and salt to product recipes. While margarines have a lower fat content than shortening, a reduction in fat content cannot be claimed in products since if they were replaced in a recipe by a 100% shortening the replacement level would be 80 – 82% of the margarine weight, with recipe adjustments also being made for the water and other ingredients in the margarine. Given that most fats are now produced from vegetable oils with no hydrogenation, particularly in the UK, this narrows the range of oils that are available for shortening and margarine blends.

Fluid shortenings As said earlier, some of you will be familiar with fluid shortenings, particularly from a bread manufacturing point of view. A fluid shortening we would define as a fat which is pumpable at ambient temperatures. It contains solid fat which has been processed to ensure that it remains suspended in the fluid throughout a range of temperatures (roughly 10-25 C) without losing its intended crystal structure. It should not be melted as this removes the functionality created by its special processing. Fluid shortenings can now be used in more applications, such as short crust pastry. Moving to fluid shortenings for short crust pastry, where possible, offers the greatest saturated fat and total fat reductions. The pros and cons of fluid shortenings are given below:

- Benefits of fluid shortenings:
 - Reduced addition rates (up to 20%)
 - Reduced packaging costs
 - Reduced manual handling (& reduced labour)
 - Lower saturated fat
- Disadvantages of fluid shortenings:
 - Setup cost of tank & pipe work (typical payback 12-24months)
 - Recipe reformulation required due to fat reduction
 - Cannot be used for cr mes (confectionery fillings)

Fluid shortenings are very technical ingredients from a recipe formulation point of view. Whereas with boxed shortenings you can probably change one formulation for another and maybe just tweak mixing times. With fluid shortenings you are looking

at very exact recipe formulations because of their required functionality and the nature of the product. Fluid shortenings will aerate - you can beat them up with sugar and they will aerate but they won't hold a firm batter, so there are limitations on the range of products for which fluid shortenings are suitable. However where they can be used, as in short crust pastry products, there are considerable benefits in both reduced total fat and reduced saturated fat.

Just to take a look at the fluid technology. The solid fat content in fluid shortening is much lower than in boxed fats. Using different physical processing techniques to boxed fats, the solid fat crystals in fluid shortening have more functionality. The fluid shortening consists of tiny crystals of solid fat suspended in liquid oil. This creates a large surface area which quickly disperses during dough mixing and forms thin layers of solid fat around water or air pockets and coats the flour particles. This solid network supports the air or water pocket during baking just like solid fat from a boxed shortening. However, because the crystals are so small and so well distributed throughout the pastry, less of the solid fat is needed to give the same functionality.

Fluid shortenings for pastries, biscuits, and cakes can have 60-80% liquid oil content. The more solid fat you can suspend in the liquid oil, the more functional the fluid shortening can be. However, it takes very precise processing to make sure that high levels of solid fat can be maintained in the fluid shortening without separating out over time or due to temperature abuse. It is very difficult to achieve, but once the crystalline structure has been created, it can be very stable. Fluid shortenings disperse rapidly because of the fluidity, the way it coats the flour, so it is very important that it should remain fluid. For a good result from fluid shortenings, you need to reduce the fat level, otherwise the pastry will be too greasy and may oil out. In formulations for fluid shortening for biscuits we use what are called 'high oleic' vegetable oils. These are much more stable to oxidation and therefore give better shelf life stability in products such as biscuits. Oils and fats break down naturally over time in the presence of oxygen, so for biscuits with a long shelf life, we have to use more stable oils. Some oils, such as rapeseed oil, which is high in polyunsaturated fats, oxidise much more quickly.

Fluid Shortening Functionality v/s Solid Fat

- To compensate for shorter eat qualities, fat reductions of around 10-20% are required for equivalent performance to solid shortening
- In savoury/sweet short crust pastry with 20% fat reduction:
 - Similar eat characteristics
 - Similar sheeting
 - Quicker dispersal of fat in the dough
- In cakes with 15% fat reduction
 - Slightly reduced volumes
 - Slightly drier eat characteristics
 - (both the above can be solved by suitable emulsifiers)
- In crèmes (confectionery fillings)
 - Not suitable

Fluid Shortening Summary

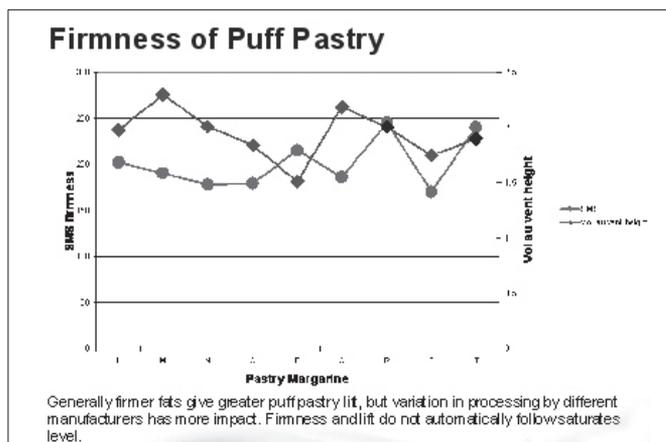
- Fluids are the most effective way of reducing saturated fat and energy content
- More resource and potentially investment may be needed

initially to change to fluid shortenings

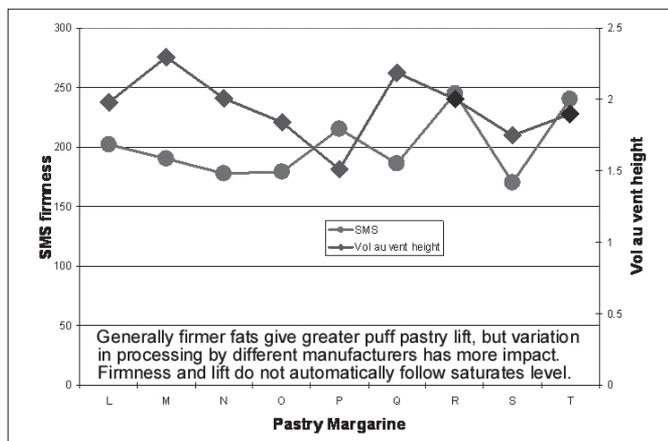
- Fluids are more suitable for large scale manufacture
- In the longer term, fluid shortenings pay for themselves in fat reductions, packaging reduction and labour savings

Puff and Danish Pastry In puff and Danish pastry the puff pastry fats perform a totally different function to fats in short pastry. They must be capable of being laminated with dough to produce separate very thin dough and fat layers. Puff pastry fats by their nature are highly saturated fats which are firm and plastic, which allows them to be rolled out very thinly, without the fat layers in the dough breaking down. So you need a different oil blend and different characteristics for these products. Different degrees of firmness and melting points are also required for particular applications. Firmer puff pastry fats with a high melting point generally give better lift and more stability in puff pastry. However softer puff pastry fats with a lower melting point are often used for products which are eaten cold so they do not have a greasy taste. These tend to give lower lift and less stability during processing however. To make hard pastry margarine, much more solid fat is needed in the formulation and this comes from using high saturated fat.

Saturated fat in pastry margarine We took a range of pastry margarines from various manufacturers and analysed their saturated fat levels and there was not a significant difference between them. One sample had lower saturated fat content, but then we detected trans fats in the blend, which took it up to the total saturated fat of the other samples. The trans fats came from using hydrogenated oils in this pastry fat. Other countries in mainland Europe still use hydrogenated oils but we don't in the UK. That is one thing to be careful about. You may get a supplier telling you that his company can supply a lower saturated fat pastry margarine but this may be because it contains hydrogenated oils!



When you look at the firmness of puff pastry, generally the firmer fats give great puff pastry lift and this graph shows on the left hand side what we call SMS, an analytical measure of hardness and on the right hand side the height of a vol-au-vent. Vol-au-vents are a good way of measuring lift in puff pastry. You can produce them, take the middle out, and measure them so there is a tangible result. When we process our range of fats with different levels of hardness in our factory, we get a uniform trend where the firmer the fat, the higher the vol-au-vent level. However this graph shows that the firmness of the fat and its vol-au-vent height are very individual to the brand of fat and so it's also very important how the fat is manufactured and processed. Each manufacturer will process slightly differently



and also use slightly different blends so that is equally as important. For example when processing our fat T, this was formulated and processed to have the same performance as some of the other products further along, fats which have higher levels of saturated fat. Fat T is actually both a lower fat laminating product, and has an oil blend lower in saturated fat. Again by using different blends of oils and optimizing how they are processed, you can get very similar results.

Puff Pastry Conclusions

- Most brands of pastry margarines have similar saturated fat levels, so just changing brand won't help
- Pastry margarines are very individual to a process, so changing over to lower saturates is less simple than for short crust pastry
- The FSA may recommend reducing addition levels, but this may not be ideal for your product
- Using slightly reduced fat levels in the pastry margarine gives the saturates reduction with less impact than reducing addition levels

General conclusions At ADM, in common with other manufacturers, we have been developing a wide range of reduced saturated fats suitable for most for bakery requirements under one of our brand names and a lot of this work has been driven by Jo Bruce. As well as being a scientist Jo is also a qualified nutritionist, so she has a genuine interest in the reduction of saturated fat in food. So we are trying to do as much as we can to help the baking industry make the transition to lower saturated fat products as easy as possible. Thank you.

Question: John Kennedy, Rutland

About 10 years ago when fluid shortenings first came out a particular doughnut manufacturer tried to switch from a pumpable shortening to fluid and rapidly had to change back. Have fluid shortenings changed that much now?

Answer: Yes they have. Just to clarify between the two products: pumpable shortenings have the same formulation as boxed products but are held at a higher temperature to enable them to be pumped; fluid shortenings have a stable crystalline structure at ambient temperature but are pumpable without being heated. At the time John is talking about we were at the early stages of development with very relatively low levels of solid fat content in fluids. Since then we have developed them further to increase the amount of solid fat in the oil phase, so you are now getting more functionality from a fluid shortening than what you would get 10 years ago. Probably it is fair to say that 10 years ago we were only starting to do a lot of development on those products.

So yes, now fluid shortenings are used throughout the industry and probably in short crust pastry, where the application is more difficult than with the likes of doughnuts, where you've got a relatively low fat to flour level in the dough. Short crust pastry has a lot higher 50% fat to flour at 50% but fluid shortenings are more effective now.

Question: Katherine de Wint, West Yorkshire

When we try fats such as the ones you are showing there is obviously a wide range to choose from and on a specification you get a fatty acid content and maybe an iodine value but you've shown that that doesn't necessarily tell you performance. What objective measures should we be looking for on the specs?

Answer: General indications to look for are NM., NMR values give you, in this instance, 20 degrees to 35 degrees. 20 degrees is general working temperature, 35 degrees is body temperature so initially you want to look at the N20 and that will give you an indication as to the firmness of the product, so depending on what the application is if you are looking for, say, a product to use in maybe an icing you would want a relatively high N20 but a very low N35, so a very low level of solid fats at 35 degrees. Very sharp melt curve. For general shortenings you want that to be slightly shallower so you've got more function across a wider range. Look at the N20's look at the N35's but then evaluate the sample by working it between your fingers, see how it spreads, how it distributes, how quickly it oils, because what you are doing there is replicating what a mixing machine will do and if the product oils very quickly then there is more likelihood of that happening in your process. Look at what you want from the fat, is it distribution characteristics you want, or if it's pastry for example you want a good distribution through flour. If it's something maybe a little bit less stressful, puff pastry dough fat for example then you've got a little bit more tolerance, yes you want distribution but it's in a low level. But it is N20, N35 and texture.

Sessional Chairman Keith Houliston

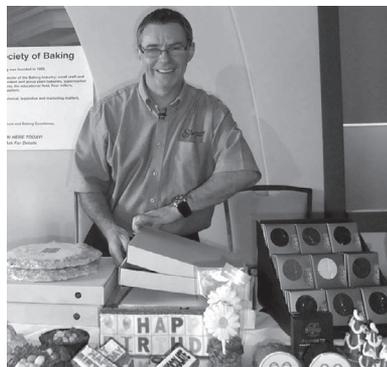
Thank you very much Steve for presenting Jo's paper and answering the questions in an excellent manner. That completes our morning sessions, which have been very good indeed. After lunch Sara Autton will look after the afternoon sessions.

Sessional Chairman Sara Autton



Ladies and gentlemen welcome back for our first afternoon session. John Slattery hardly needs any introduction from me since his is a name that is synonymous with the highest quality chocolate cake and patisserie products and indeed has been so for many years. His passion for his craft and for enthusing the uninitiated is obvious to anyone who has been privileged to see him demonstrating or to attend his training courses. His book 'Chocolate Cakes for Weddings and Celebrations' is good enough to eat, so I am very much looking forward to his presentation. If you are hungry afterwards for more knowledge, or more chocolate, I am sure John will be happy to welcome you to the Slattery School of Excellence

which he has established in the former Mason Arms Public House in Whitefield, Manchester after a very substantial refurbishment. If you are looking for the ultimate in flavor experiences John can offer a broad spectrum from chocolate to coffee to wine tasting. However today he has kindly agreed to share with us a glimpse into the world of edible art. Ladies and gentlemen, John Slattery.



John Slattery with some of the products he presented. A display unit for bars of chocolate is bottom right, see page 28.

Chocolate Presentation John Slattery

Good Morning. Slattery's bakery started over 40 years ago and over the years there have been many changes in the business. 19 years ago we split the business into a general bakery and a specialist patisserie & chocolatier. However

next year we hope to put the two businesses together again in new and much larger premises, which will give us many benefits in production, presentation, sales and customer parking. We try to give our customers a bit of theatre in our product range and presentation and this encourages them to bring their friends with them when they shop, who in turn become potential new customers. I am hoping to get a call later today to say whether or not an offer I put in for the new building had been accepted, so it is a very exciting time!

I had to think hard about the range of products I would cover since the BSB members come from a wide spectrum of the industry. Therefore I will cover some new products, a few ideas which have been successful in our business, some innovative products and some that have been around for some time and hopefully if you take away a couple of ideas for your own business it will all be worthwhile.

In a recession people still appear to find money for luxuries, such as cosmetics and, thank goodness, chocolate. Last year chocolatiers reported a record year for sales and Cadburys had a 30% increase in profits. Sales of lipsticks and other cosmetics also increased! People are looking for a treat in austere times and in our business we like to help our customers to spend their money, while making them feel better at the same time! Chocolate can and should add value to a product. While the appearance of our products helps to get the first order, quality and taste are essential for repeat orders. So the initial purchase is made with the eye but repeat orders come from the taste, which comes from using ingredients of the best quality. Take the humble chocolate rice crispy cake. Cadbury have recently re-introduced this product for the supermarkets and hopefully it will be better than the product many bakers made using bakers chocolate compound. (NB John has distributed chocolate samples to the delegates for tasting during the session and the first for tasting were a bakers chocolate compound and a reasonable quality milk chocolate).

Milk chocolate is twice the price of bakers chocolate compound and the initial reaction is that it is too expensive for a humble chocolate rice crispy cake. However the chocolate content of a



Chocolate Rice Crispy Bars

rice crispy cake is less than 20%, so for an average sized product the price difference is only about 3p! As I am sure you will agree from the tasting samples, the flavour improvement with the milk chocolate over the chocolate compound is considerable. The quality and flavour therefore justifies the extra price of the chocolate rice crispy product. A lot of chocolate rice crispy products are aimed at children and they do appreciate good flavour.

We can in fact, take the chocolate rice crispy cake idea and use it as a base for many products and I will present a range of product based on chocolate rice crispies. NB The chocolate rice crispy mixture used for the following products included rice crispies mixed with dark chocolate, milk chocolate and white chocolate. White chocolate, with an appropriate colouring, was also used for some of the product finishes. The following are some of the products John presented, with photographs.

Valentine Heart Rice Crispy Cake Made with white chocolate rice crispies and finished with a sugarpaste top printed with 'BE MY VALENTINE' and a red chocolate heart.

Valentine Heart Rice Crispy Fingers It is more cost effective to make a sheet of chocolate rice crispies, top it with sugarpaste with suitable printing and motifs and cut it into fingers.

Chocolate Rice Crispy Nest Make a nest from chocolate rice crispies and put eggs in the centre for an Easter novelty cake.

Added Sales Encouraging customers to purchase an additional item to the one they came in for this is very cost effective. If they come in for a birthday cake they may want to purchase finger rice crispy birthday cakes for putting in goodie bags for the party guests.

Everyday Chocolate Rice Crispy Fingers By altering the wording and logos on the chocolate rice crispy fingers we can create an everyday sales line. (e. g. I Love Chocolate, with a red heart)

Large Oblong Chocolate Rice Birthday cake Chocolate rice crispy sheet coated with sugarpaste with HAPPY BIRTHDAY printing, which can be cut into slices at the party.

White Chocolate Flower in a Chocolate Rice Crispy Pot Chocolate rice crispies made into a pot shape in a mould, with a moulded white chocolate flower.

Round Chocolate Rice Crispy Novelties A round of chocolate rice crispies with a printed sugarpaste disc on top with a 'Funny Face' sketch.



Chocolate Rice Crispy Valentine and Nest & Eggs Cakes



Chocolate Rice Crispy Funny Faces and Christmas Tree Cakes



Mothers day Flower in a Chocolate Rice Crispy Pot



Novelty Chocolate Rice Crispy Novelty Figures - Snowman, Bear, Bride & Groom

Christmas Sales at Christmas can make a vast difference to our annual turnover so we try to make a lot of novelty products for this time of the year, examples of which are: Chocolate Rice Christmas Tree - rice crispies mixed with green-coloured white chocolate, put in a conical mould to set and finished off with white icing.

White Chocolate Rice Crispies can be used to produce an angel, a snowman and a Father Christmas figure, finishing with modelled sugarpaste using the skills we have in confectionery finishing.

Wedding Novelties Going away from the Christmas theme the above figures can be extended to a bride and groom for a wedding, as well as guests, see illustrations. These may be bought with the wedding cake for giving out to the guests at the reception and at £10 each, increasing the overall sale value considerably.

Chocolate Pizza I saw this novelty product in a shop and although it wasn't very good appearance and taste wise, I liked the idea. We have therefore produced our own chocolate pizza, see picture. It has a Chocolate Rice Crispy base and red coloured white chocolate on top for the tomato sauce, white chocolate shaving for the cheese and sliced sweets as the fillings. We also do individual pizza slices.



Chocolate Rice Crispy Pizza

Chocolate Garlic Bread This follows naturally on from the pizza and is made from white chocolate rice crispies and chocolate shavings.

Chocolate Beefburger (Burger 'n' Bun) Staying with the theme of fast food we have the Burger 'n' Bun. The bun base and top are made from marshmallow, the top sprayed with chocolate and sprinkled with sugar so it will not stick to the packaging. The filling is made from chocolate rice crispies, a square of coloured sugarpaste for the cheese, and red coloured white chocolate for the ketchup. This sells well at £5.95!



Chocolate Rice Crispy Beefburger (Burger 'n' Bun)



Chocolate Tagliatelle Meatballs

Chocolate Tagliatelle Meatballs The tagliatelle pasta strips are produced from white chocolate paste made from white chocolate, syrup and glucose. Roll out the white chocolate paste and cut into strips. Gather up the strips and wind them into shape in the packaging container. Use chocolate rice crispies as the mince filling and red coloured white chocolate as tomato puree.

Spaghetti Bolognese The spaghetti is made by spinning white chocolate thinly over a marble slab that has been cooled at -18°C and gather up the strands before they set and wind them into shape in the container. Then add chocolate rice crispies as the Bolognese sauce.

Desserts After all these savouries we can move on to desserts with an Ice cream Sundae using white chocolate balls the colour of ice cream in a sundae container. Another sundae is produced from piping mallow into a sundae glass and topping it with meringue, chocolate pieces and a cherry, see photographs.



Chocolate Ice-cream Sundae



John demonstrates a Chocolate Ice-cream Sundae

Bars of Chocolate Take advantage of the present world demand for chocolate and the current upsurge in sales in the UK. Research has shown that 50 g (2oz) of chocolate is the ideal treat for getting a 'feel good' factor during the day. It makes perfect sense therefore to sell a 50g bar of chocolate alongside a lunchtime takeaway product. It is not big enough to share and people can eat it and not feel guilty. A good idea therefore is to produce your own bars of chocolate and there are some inexpensive thin plastic moulds available for this purpose which end up as part of the chocolate bar packaging. They are 'one use' so you do not have to invest in expensive multi-use moulds which have to be cleaned and stored between use. You simply lay the moulds out on a tray and pipe tempered chocolate into them until they are full, which gives you a 50 g block. The thin plastic moulds come with small boxes for the chocolate blocks and you pack the chocolate and mould together in the box. The box has a window to show the chocolate and we finish it off by

sticking on a label with the product details and our own details.

Chocolate Cocoa Content Through the media people have become more aware of the cocoa content of chocolate and of chocolate quality, with, within reason, the higher the cocoa content the better the quality and health benefits. So using a good quality chocolate with a high cocoa content for the chocolate bars, and emphasising this on the labels, greatly helps sales. The bars of chocolate can fit into a counter sales unit, see photograph, page 26. We supply chocolate bars from the milk, white and dark chocolate we use every day in our business, as well as from some higher cocoa content chocolate – a 41% chocolate from Venezuela, a 70% chocolate from Ecuador and an 81% chocolate from Uganda. (NB John had supplied samples of the 81% chocolate from Uganda for the audience to taste.)

However assessing chocolate flavour is a little like wine tasting – people can have a different appreciation of the flavour of wine and chocolate. A high cocoa content does not ensure a good flavour – you can have a range of 70% chocolate which taste differently, depending on the original cocoa beans. You can get good quality beans and poor quality beans. Our 50 g chocolate blocks sell from £1.50 to £1.95 depending on which chocolate is used to produce them. So adding one or more bars of chocolate to a savoury takeaway sale can increase the overall sales value considerably.

Health Benefits While chocolate is eaten for pleasure, there are potential beneficial health effects of eating chocolate. Eating chocolate releases a chemical (serotonin) in the brain which greatly improves your mood. An increased amount of neurotransmitters from eating chocolate also helps us to feel good, with more energy. Chocolate also contains the powerful antioxidant poly-phenol which can lower the risk of heart disease and reduce blood pressure. This is a similar effect to drinking red wine, so you can make sure you are getting the full benefits by eating chocolate and drinking red wine!

Training Courses Producing blocks of chocolates and moulded chocolate pieces does require the skill of tempering chocolate, which many bakers have learned but rarely use. It is certainly a skill worth learning because chocolate is a wonderful medium to work with. If you want to learn the basics of tempering, handling chocolate and producing truffles and moulded chocolate pieces, we do, if I may slip in a small advertisement at this point, offer a two day training course on chocolate, which is very popular. See our website for further details, www.slattery.co.uk if it is of interest.

Willie's Wonky Chocolate Factory You may have seen on television a series of programmes called Willie's Wonky Chocolate Factory, about Willie Harcourt-Cooze, who spent 11 years growing cacao on his Venezuelan plantation and who set about producing chocolate and marketing it in the UK from a factory in Devon. He is a lovely man and from his plantation in Venezuela he produced these 100% cacao solids blocks, see photograph. This product is not meant to be eaten as it is but to be used in other foods to add an intense and very good chocolate flavour. It can be grated into chocolate cake, added to sauces, etc. Willie has also just



Willie's Wonky Chocolate Factory Chocolate Bars

produced a two x 50g blocks pack of chocolate at 72% solids from this Venezuela cacao for retail sale, and the same from Peruvian cacao at 70%.

Lollipops A line which has been very successful for us for many years is chocolate lollipops, which are simple to produce. Pipe circles of chocolate onto a plastic sheet, put in the lollipop sticks and leave them in a fridge to set. The next day our chocolate team pipe on inscriptions, many popular ones being used regularly (Granddad, Teacher, etc) but depending on how they are feeling, the inscriptions can sometimes be a bit rude! However any lollipops which do not sell can be melted back down again for reprocessing! We put the lollipops in plastic sleeves which hang on hooks on a special display unit with 60 hooks, each hook holding 6 lollipops. They sell for £1.95 each and are popular as small gifts.



Chocolate Lollipops

they sell much better if we add another item to the lollipop – a little gift attached to the packaging depending on the lollipop figure – some sugarpaste bananas added to a monkey shaped lollipop and sugarpaste carrots added to a rabbit shaped lollipop for example. The selling price is £3.95, so it is worth the effort!

Chocolates To take your chocolate offering further we can produce a range of chocolates from an unflavoured ganache (fresh cream, chocolate and glucose heated and blended together), adding flavour to the chocolates at the final point of production. This allows you to produce a selection of chocolate flavours from one batch of ganache. You can use the ganache in the following ways to produce chocolate centres: a) pipe out long strips of ganache onto a plastic sheet and when they have set cut them into pieces ready to be coated with chocolate b) pipe out bulbs of ganache, round or oval, onto a plastic sheet to give individual chocolate centres. This takes a little bit of piping skill to get the correct shape and size c) buy hollow chocolate spheres and pipe in the ganache. The advantage is that they are all the same shape and weight but the disadvantage is the cost, around 6p each. A further method of producing the ganache chocolate centres is to use a new product on the market, flexible chocolate moulds. Available in various final chocolate shapes and with 60 or more shapes per sheet according to the shape and size, you spread the ganache over the sheet to fill all the shapes, scraping the surface level. When the ganache sets the pieces are easily released from the moulds, giving you a range of chocolate centres very quickly and with little skill. NB There is also a double mould available which allows you to make chocolate ganache spheres and, for a different application, even round jellies. After filling the moulds are refrigerated and when set the ganache pieces drop cleanly from the moulds and are all a uniform shape.

After we have produced the ganache chocolate centres and they have set, we hand-roll them thinly with a piping chocolate. We

let them set and hand-roll them again with piping chocolate and then roll them into a sugar/flavour mixture to produce the final flavour required. So we can produce a range of flavours from the chocolate shapes according to what flavour is required. We roll the ganache pieces into freeze dried fruit, vegetable, herb or whatever, powders, which are mixed with sugar to give the coating mixture. The freeze-dried flavour powders are produced by a company called Liofruits and are supplied by Sosa of Spain (websites: www.liofruit.com and www.sosa.cat). By having a stock of chocolates with the neutral flavour ganache ready for the final coating of chocolate and the application of flavour, you can produce particular flavours when required to meet sales demands.

Flavour Offering We like to take our flavour offering seriously and have flavour combinations which include: strawberry and balsamic; pistachio and red or black pepper; coffee praline; cinnamon praline; strawberry and black & red pepper (which was one of the chocolate samples the delegates were given to taste).

Also back to the basics flavours, such as caramel and apple pie. Last year we did something for the Manchester Tourist Board who wanted a product to represent the area. We thought of the pudding and tarts that were available in the area over the years. The Manchester tart was very popular and was based on a pastry case with a layer of jam, a layer of custard and coconut on top. We decided to do this in chocolate and it worked very well.

The ‘Alphabet of flavours’ sensory analysis tool (see photograph) John said this was an ideal way to test combinations of flavours. Small containers of 180 flavours are arranged in a special box with drawers in the following categories: **alcohol** – whisky, gin beer, etc; **cocoa bean** – cocoa flavours plus coffee, bitter almond, hazelnut, etc; **dairy** – Yoghurt, butter, cream, etc; **flower** – lavender, orange blossom, etc; **fruit** (wide range) – kiwi, cooked apple, coconut, lychee, peach, watermelon, grape, cherry, ripe banana, etc; **herb and plants** – dill, basil, mint tea, juniper, etc; **meat** – smoked bacon, chicken, etc; **mushroom and fungi** – white & black truffle, ginger, etc; **spice** - dill, basil, fennel, etc; **sea** - caviar, oyster, mussel, etc; **seed** – aniseed, mustard, etc; **smoked** – barbeque, etc; **sweet** – caramel, toffee, etc; **tree and forest** – acacia, balsamic fir, etc; **vegetable** – garlic, onion, tomato, etc. To test a flavour combination you dip separate tapers in the two flavours you want to test and let them dry. Put one of the flavour tapers up to your nose and appreciate the flavour aroma. Then bring the other taper slowly towards the first flavour until you get a combination of the two aromas and can therefore appreciate the combined flavour. This allows you to test a wide range of flavour combinations without spending time and cost testing them in products. Once you feel you have an interesting flavour combination the final test of course is in a product.



Adding flavour to chocolate We can add flavour directly to chocolate by first adding it to cocoa butter and then adding the cocoa butter to the chocolate. First you warm the cocoa butter to melt it – just above body temperature, and add the flavour – paprika, chives, whatever, and keep it warm and shake or stir it from time to time to accelerate the transfer of flavour to the

cocoa butter. Once the flavour transfer has been achieved pass the melted cocoa through a sieve to remove any solids that are present from the flavour product. The flavoured cocoa butter is now ready to add to the chocolate you want to flavour, ensuring you are only adding a natural product to the chocolate with the flavour. The additional cocoa butter gives the chocolate slightly sharper snap when it sets.

Special and unusual chocolate flavours I had a call from a company called Dartmoor Chilli to produce a Chilli Flavoured Chocolate in 100g bars in milk, plain and dark chocolate. I submitted samples which they liked and they then asked for a chilli and mango and a chilli and orange flavoured chocolate. Again no problem and they liked the samples we submitted. Then they asked for a chilli and peppermint flavoured chocolate and I thought that this was a step too far! However I was wrong because the combination works very well. As you eat the chocolate you first get a lovely minty chocolate flavour then you get the fiery chilli flavour at the end and the two flavours work very well together. NB Since a sample of this chocolate was in the chocolate samples John supplied to the audience, delegates were able to taste it for themselves and it certainly got them talking!

Short Life Lines We like to introduce new products from time to time as ‘one – offs’, to go with the standard lines we do all the time. A good way to do this from a chocolate point of view is to use cheap short life flexible moulds. You can have them made for around £3 each and they last for a season, so they more than pay for themselves during the season – Easter, Christmas, etc. This, see photograph below, is an unusual Easter egg mould in that the front and back are flat and not oval, the



John shows off a new Easter Egg shape



Novelty Chocolate Chickens & Box

back being plain and the front has a pattern on it. You can see the shape and design in the photograph.

We have three specific patterns and the patterns are brought out by piping in white and dark chocolate. We treat these as Easter Eggs for adults and put some good quality (for grown ups) chocolates in them.

For something popular with children we also have moulds for producing a small moulded chocolate piece similar to an egg but in the shape of a chicken. These can be sold in an ‘egg box’, see photograph above!

My final piece demonstrates that we do take notice of trends and in view of its popularity in the current economic climate; we have made a chocolate bar in the form of a vanity case with three lipsticks in it! Thank you very much.

Sessional Chairman Sara Autton

Thank you very much indeed John, I have to say I am in sensory overload with all these fantastic samples and the products look gorgeous. I love that chocolate pizza particularly! Have we any questions for John please?

Question: Sara Autton. Bearing in mind what was said to us earlier this morning in the 'reducing saturated fats' paper about the idea of using cocoa butter equivalents (CBEs) in chocolate with lower saturated fat, is that going to affect how chocolate behaves when you are trying to create these types of products.

Answer: Yes they would and we wouldn't use them! You can't have good flavour, good taste, in chocolate without cocoa butter and therefore I would not go down the route of replacing it with CBEs. A good quality couverture chocolate has only got natural ingredients- cocoa butter, cocoa solids, maybe a small amount of lecithin and sugar. Sometimes there is no added sugar in a dark chocolate, so it's diabetic acceptable. If you take a product which is classed as a family chocolate, a Cadbury's type product, all or some of the cocoa butter has been replaced with other fats, usually palm oil, which may make it slightly healthier. But there is also a high level of sugar in this type of chocolate, which would seem to cancel out any health benefit of reducing the level of saturated fat.

Sessional Chairman Sara Autton

Thank you very much again John for your wonderful presentation.

I think we are all agreed that the issue of finding and retaining staff of suitable and appropriate skills is a thorny one and our next speaker has been heavily involved in this area. Matthew May gave us an excellent paper to this conference in 2008 on the challenges facing the baking industry in terms of training, and I am delighted to welcome him back today to give us an update on the progress that has been made since then. Matthew is a member of the National Bakery Skills Academy Steering Group and is on the Executive Committee of the Alliance for Bakery Students & Trainees (ABST). Matthew works for the Odlum Group in Dublin and tries to use some of his free time enjoying the beauty of County Wicklow where he now lives with his young family. Ladies and gentlemen please welcome Matthew May.

Update on the National Bakery Skills Academy

Matthew May

Thank you very much. Before I start with the main body of my presentation, for those of you who don't know, I thought I would give you a brief history of the Alliance for Bakery Students & Trainees (ABST). There's been an organization involved with bakery students for about 85 years and was originally called the National Federation for Bakery Student Societies (NFBSS). In 1999 the NFBSS amalgamated with the Institute of British Bakers to form the NFBSS/IBB Alliance. About 5 years ago we did a strategic review of the NFBSS/IBB Alliance to try and identify where it best fitted within today's baking industry and we ended up with, among other things, a name change to the Alliance for Bakery Students and Trainees. In the same way that the BSB has its Creed, ABST has the following Vision. *"As a cross industry organisation, the*



primary aim of the Alliance for Bakery Students & Trainees (ABST) shall be to facilitate and maintain a proactive dialogue within a united baking industry around all issues relating to bakery education and training. In all its thinking, the ABST shall always seek to retain, develop and maintain the underpinning craft skills and technical knowledge required by the baking industry. Further, the ABST shall forever offer guidance, share information and seek to support all who are studying bakery or undertaking bakery training within the industry".

At the BSB Conference held at the NEC in April 2008 in conjunction with BIE 2008, I delivered a presentation entitled "A Vision for the Future" on behalf of ABST. The presentation had also been delivered to various trade associations of the baking industry - NAMB, BCA, WCB, FOB, NABIM and ABIM. The presentation made some bold statements, including: "The Baking Industry has a problem" and "Things need to change". It also asked some pertinent questions, such as: "Can the current problems in bakery be overcome?" The main aim however was to inform industry members of the issues that the industry faces, particularly within the area of education and training. The presentation also called on the industry to unite on this subject and support the initiative. Briefly the presentation highlighted: the decline of the baking industry's current skill and knowledge pool; that the industry's future skill and knowledge requirements would not be met as appropriate education and training was not being delivered; the fact that current qualifications did not deliver sustainable skills or knowledge; the decline in Educational establishments running bakery courses.

My presentation also informed industry members of the Leitch Report - its requirements and influence on Government thinking:

- The policy driver on skills both within the work place and schools/colleges
- UK – World leader in skills by 2020

The presentation then asked "Can the current problems in bakery be overcome?" I reported that Improve Ltd., the Food & Drink Manufacturing Sector Skills Council, had recently launched what they believed to be a modular, flexible qualification framework. At the time the industry didn't know about it and the questions were being asked - was this the right thing or not? An example was given of how the sea fish sector had come together as "One Voice" to develop a National Skills Academy Centre dedicated to their sector was given. A way forward for the baking industry was then presented - the formation of a National Bakery Skills Academy. The Industry was then invited to support the initiative in principle and participate in a "One Voice" seminar to debate and agree the correct way forward being held later that day.

What Happened Next?

The "One Voice" seminar took place later that day at the NEC on the evening of Tuesday 8th April 2008 and the event was attended by 80 – 90 representatives from all areas of the baking industry including: managing directors of national and regional companies; bakers with an interest in the industry's future; bakery lecturers and trainers. A proposal for the formation of a Steering Group, tasked to work with the National Skills Academy to develop a National Skills Academy Centre for Bakery and a relevant qualification, was submitted to the

attendees was accepted unanimously. The steering group was formed and comprised of a representative from each of the Bakery trade associations so that it became truly cross representative - *ABST, WCB, FoB, NAMB, BSB, BCA, ABIM*. Members of the Steering group selected a Chairman, Dave Brooks, Finsbury Group, at their first meeting, gave the Group a life span of 6 months and set themselves the task of:

- Identifying what is required of a Network Champion
- Appointing a Network Champion
- Identifying potential funding streams
- Developing a draft curriculum for a training course applicable to the whole of the baking industry

I will now take you through these points separately.

Identifying what is required of a Network Champion

The steering group agreed that the Network Champion should:

- Lead the development of multi-level course content with the Bakery Academy Provider Network under the direction of the Steering Group
- Obtain accreditation for the course content to create a nationally (or internationally) recognised qualification /“skills passport”
- Develop the National Network of Training Providers
- Monitor the Network to ensure quality of training provision, consistent delivery of the course content, and offer progression support, audit, and accreditation
- Provide advice on, and secure, funding for the Academy
- Develop alternate means of providing tuition (i.e. distance learning, internet etc)
- Gradually take over the duties of the Steering Group, until that body becomes a consultative partner or Governing Body. The Governing body part is quite important because the Steering Group is representative of the industry and for us to make sure that the industry achieved what we wanted, the network champion needed to be accountable to the Steering Group
- Market the Academy outside of the industry, particularly via schools, colleges, and careers advisory services. Again try and task them with what the NA did very well last week with the Craft Bakers Week – we are trying to encourage young people to come into the industry by choice rather than of necessity.

Appointing a Network Champion

A brief, outlining the role of the Network Champion, was circulated along with an invitation to tender for the position. Each candidate had to submit a proposal which was vetted by the Steering Group and those short listed for the position had to give a presentation detailing:

- Their knowledge of funding options for the Training Network
- Their knowledge of funding options for employers whose employees participate

- Their knowledge of potential Network partners
- The course objectives, deliverables and qualification levels suggested at each stage.
- Details of time commitment and course costs for employers
- How they would develop alternate methods of course delivery
- How they would market the scheme outside of the industry and work with the Steering Group within the industry
- Evidence of their understanding of the Steering Groups aspirations and their shared vision
- Their views of the biggest challenges facing this venture and how they may be overcome them
- The investment they were prepared to make to support the launch

After all the presentations were assessed by the Steering Committee, Campden BRI was appointed Network Champion and Leeds Thomas Danby College was appointed Lead Training Provider Status. So we have Campden BRI acting as the facilitator with the Steering Group to bring all the relative information together and they are working with the colleges and training providers to deliver what’s required.

Identifying potential funding streams

The Steering Group looked at various ways to raise and provide funding: There was talk of levies, where employers would pay for the delegates who wanted the courses. What Available funding through Government. Funding is available through donations and some donations have been made already from bakery organisations. I can now say however that funding has now been secured from the Sector Skills Council to deliver a pilot course in the Northwest of England and that’s due to take place in September this year.

Developing a draft curriculum for a training course applicable to the whole of the industry

The Steering Group, along with the Network Champion & Lead Training Provider, worked to develop a “Level One” training course framework. A draft curriculum was written by members of the Training Provider Network, facilitated by the Network Champion and a Steering Group sub committee and mapped to learning objectives.

Further Progress

By end of December 2008, the Steering Group had achieved its main objectives and agreed to continue as a Group. Ian Thomson, owner of Thompson’s Bakery, Ponteland, Newcastle, was appointed Chairman following the resignation for business reasons of Dave Brooks, Finsbury Group. One thing I would say is that while this is still going on it is vitally important that the industry engages in what we are trying to achieve here and I again challenge the industry to come forward and put your money where your mouth is and help in what we are trying to achieve.

Future Steps

- We are working to deliver the pilot course between the Network Champion, the Network Training Providers and the Steering Group

- A review of the pilot course when it is completed is required so we can make any required changes based on the information we receive
- We will also work to marry the curriculum and draft qualification with the Qualification Standards developed by Improve and their Employer Technical Group. This is necessary for us to receive accreditation and funding
- We also need to start looking at the development and accreditation of “Level 2” & “Level 3” qualifications
- Marketing of the courses to the industry needs to be completed
- An exercise to identify gaps in the Training Provider Network is to be completed and acted upon. For example, we have Tameside College and Blackpool College in the North West, we have Leed’s Thomas Danby in Yorkshire and we have Brooklands College and the National Bakery School in the South East. But you look down the South West there is not a great deal of training provision there. So it is harder to fill those gaps to make sure we can get this training initiative delivered nationally
- Ways of promoting the industry in order to attract the next generation of bakery trainees are to be identified and implemented. Again the work the NAMB did with the Craft Bakers Week initiative was very good and is something I will take to the Steering Group to see if it is something we can work closer together on as well

So thank you ladies and gentlemen. It was short and sweet and I will be happy to answer any questions.

Question: Richard Ball, Colchester

Matthew I have just recently joined the Sector Skills Council assisting with the standards and underpinning knowledge. I believe there was a member attending your session at Chipping Camden but basically was confused with the communication between the two sectors. Are you in contact with the Sector Skills Council developing the standards?

Answer: The way I understand it is that if we talk about the Sector Skills Council we talk about Improve. So Improve have the Employer Technical Group and they have been working to form qualification standards. They cover a very broad spectrum of things and it’s not just bakery it covers, it is food industry wide. There are bakery specific areas for that as well but there is no real qualification that’s going to come out of that, it’s just qualification standards and what the Steering Group is looking to do is develop the qualification and training that the industry requires and then marry the course it has come up with with the qualification standards so that we end up with a course that is accredited and then obviously gain the funding that is required to run it.

Question: Richard Ball - It just struck me that there was a need for somebody from your group to have some input into those standards and those underpinning knowledge issues that this group is putting together. I just felt that each side needs to be closer than they are at the moment.

Answer: I wouldn’t disagree with that. What I would say is that members of the Steering Group are now attending those meetings and that is going to start taking place but I agree

entirely and one thing that I didn’t realise when I took on this role, or when we first mooted this, was the amount of politics that’s involved and I think that certain areas need to take on board is that it’s not about empire building, it’s not about what one part can do or another part can do, it’s very much about what the industry needs and what they need to do to help us deliver it.

Sessional Chairman Sara Autton

Thank you Matthew for such a very interesting and useful update.

Well now, Stephen Humphrey’s might be described as a man with a mission, his role with the FSA involves the communication of those guidelines and strategies designed to promote and protect the safety of our food and the health of the general population. He might also be described as a man with a target on his back as I am sure we all have our own views about these stratagems, particularly if they appear to throw obstacles in the way of how we manufacture or sell our products. Dialogue and communication are key to the successful implementation of these stratagems and I am pleased to welcome Stephen to this conference to tell us about the FSA strategy for safe food and healthy eating up to 2015. Before Stephen begins, this is no reflection on what we think of your presentation but you may have noticed that Stephen’s name has been left off the evaluation form, please evaluate him as you have everybody else and add your comments to the bottom of the form. Thank you very much Stephen.

The Food Standards Agency – our Strategy to 2015 Stephen Humphreys

Thank you for inviting me to speak. It’s been a very interesting day for me listening to the earlier speakers. I was particularly fascinated by the presentations from Ken Johnston and Steve Knapton. It was valuable to hear experts describe how you respond to the challenges which we set the industry. Our work on salt and saturated fat are of course very vital parts of what we do and we are very grateful for the expertise you bring and commitment which you are making. Without your efforts we would not be making the successful progress on reformulation which we are currently seeing. However the work on salt and saturated fat is, of course, only a part of the Agency’s activity. So what I’d like to do in the next 20 minutes is give you the overall picture of the work of the Food Standards Agency.



**FOOD
STANDARDS
AGENCY**

The strategic plan

It's a good time for me to be speaking to you about this. We are currently working on our next strategic plan. The plan will come into effect from 2010 and cover the period to 2015. This will be our third five year plan. The Agency began operations in 2000 so we're coming up to our tenth anniversary. There's a sense that we're at another important stage of our development, in maturing from the teenager to the young adult. So it's a good time to be taking stock.

We put our draft strategic plan out to consultation earlier this year and that consultation has only just finished. The Board and Directors are meeting in London today and tomorrow to consider the outcome of that consultation. So my talk comes with a caveat that our strategy is not yet finalised. In addition, there are two other points to bear in mind. First, the Department of Health is in the process of appointing a new Chair for the Food Standards Agency. Second, the economic climate means that our budget for the period to 2015 is likely to be reduced. However, enough of the strategic plan clearly has broad agreement and support. For example, it has been relatively straightforward to determine the high level priorities. The core of the strategic plan remains unchanged. Our vision is safe food and healthy eating for all. Some people spend all their time trying to split these apart and suggest that our focus should solely be on food safety. Let's be clear: it's a false distinction. Our statutory objective is to protect the interests of consumers in relation to food. Unhealthy eating is pretty much as dangerous as it gets, with the risks of cancer, obesity and cardiovascular disease this presents. The mission of the welfare state was to provide support from the cradle to the grave. Our mission is to make sure food is safe from the farm to the fork. That covers both food safety and dietary health. There is only a difference in whether our outcomes prevent acute or chronic ill health.

Food safety

So let me now look at each of our two areas of work and give you a picture of what the FSA will focus on in the next few years. In both food safety and healthy eating we have set three outcomes which we want to achieve.

Firstly our work on food safety is at the core of our remit. We were of course set up in the wake of the BSE crisis of the 90s. At the time there was recognition that the Government had failed to place the interests of consumers first and had overlooked the importance of food safety. It remains at the heart of what we do because, as one expert said recently:

"There are certain things only a government can do... One of these things is ensuring that the foods we eat... are safe and don't cause us harm."

That quote's not from Dame Deirdre Hutton or anyone at the Food Standards Agency. It was Barack Obama on 16th March this year – the opening words of his weekly address to the American people!

The nature of the food safety challenges we face has also been changing. Meat has traditionally been seen as the greatest source of food risk. The Meat Hygiene Service is an executive agency of the Food Standards Agency and so we devote a considerable proportion of our resources to protecting public

health from the risks associated with meat. But if you look at the US the three largest recent food borne disease outbreaks were triggered by spinach, peppers and peanut butter. Hence Barack Obama's speech.

So let me now describe our three outcomes for food safety. Our first outcome to achieve is "imported food entering the UK market is safe to eat". It's a long time since food went straight from the back garden to the plate. Yes, we are seeing the emergence of consumer interest in local food. But it's pretty much a niche market. Most of us expect the food we want, at the time we want and at the price we want. And the food industry has to meet that demand. We know that food businesses already have complex supply chains. And increasingly they adopt a flexible approach, changing suppliers according to market conditions.

As a result, today's food supply and distribution chain is much longer and much more complex than ever before. Around half our food now comes from abroad. Most is from the EU, but we also source from much further afield. This makes it much more difficult to police than ever before. Not all of the countries involved have the same high standards we enjoy. Around a quarter of incidents of food safety incidents involve products sourced from outside of the EU. So it's clear to us that we need a greater emphasis on food imports.

The second key outcome is that food produced or sold in the UK is safe to eat. We remain vigilant about the challenges of food borne disease. Current estimates are that there are around 950,000 cases of food poisoning each year. Around 500 deaths. Let me give two examples of where we will focus in reducing food borne disease. First we want to reduce levels of campylobacter in chicken and other poultry. Levels remain unacceptably high. We are investing in research to understand better the causes and improve identification of problems, working with processors and retailers. A second area of focus is e.coli. A less common problem, but where outbreaks occur, they can be devastating. Earlier this year, Hugh Pennington completed his report into the South Wales e-coli outbreak of 2005 in which 118 people, mainly children, were affected and one child died. The report provides an excellent and informative analysis of the causes of the outbreak. It occurred because of poor food hygiene practices at the premises of John Tudor and Son, a catering butcher which supplied meat to a number of schools in South Wales. Particular failures related to his cleaning practices and a failure to separate raw and cooked meats. But as Pennington notes, the requirements for food hygiene that were in place at the time of the outbreak should have been sufficient to prevent it. So it makes a series of recommendations for food businesses and for regulators highlighting areas to need to be tightened up or reinforced. We are working on a series of actions to implement the recommendations that relate to the Food Standards Agency. We also remain active in dealing with food incidents. Around 1,300 food incidents were reported to the FSA last year. Major ones included dioxins in Irish Pork and aflatoxin contamination of figs. A rapid and proportionate response to these incidents is a key measure in protecting consumers. I'm sure that many of you will be aware that one of our major recent challenges has been with fusarium toxins. In particular, with the mycotoxins deoxynivalenol (DON) and Zearalanone (ZON). Mycotoxins are toxins produced by a range of moulds growing on food crops in the field and in storage. Due to the unusual weather conditions experienced in parts of the UK at key points in the

growing cycle throughout last summer, the 2008 wheat harvest experienced considerably elevated levels of the mycotoxin deoxynivalenol (DON).

DON can cause a range of gastrointestinal disturbance and has been shown to have adverse effects on the immune system when consumed in high concentrations in food. It's not destroyed by baking to any great degree, so vigilance is key. The scale of the problem proved to be massive, 265 notifications of rejected consignments of raw grain in 2008, compared to 93 in 2007 (which itself was considered a bad year) and as a result the Agency issued updated advice throughout the year. We've been able to work well, particularly with millers and processors, to ensure that grain potentially contaminated above the regulatory limits does not get into the food chain and lead to problems in bakery and other retail products. It has recently also been identified that there is higher than usual level of ZON in UK wheat grain this year, which is causing a problem for high bran breakfast cereal products as ZON accumulates in the bran fraction. The Agency is currently working with industry representatives including the Association of Cereal Food Manufacturers and European Cereal Breakfast Association, and the European Commission, to reduce the impact of elevated ZON on UK industry. One option which has recently been discussed is to allow an increase in the permitted level in breakfast cereals, that may be subject to review. There would be a case for this, providing that this would be at a level which would not effect food safety. And we have presented a compromise level based on our own risk assessment to industry and the European Commission that we hope will be acceptable to all parties and provide a way forward. We are also investing considerably in research into this area. This includes joint projects with Defra and industry. And a £379,000 investment in exploring analytical techniques, sampling, agronomy studies and consumer safety and exposure to ensure that, together with industry, the UK is able to deal with these issues effectively.

The third outcome under food safety is that consumers make informed choices about food safety when eating outside the home and prepare and cook food safely at home. This week is Food Safety Week when we highlight how consumers can improve food hygiene. This year we are focusing on avoiding listeria. There has been a sharp increase in cases in listeria in people over 60 – cases have more than doubled in the past nine years.

Our campaign is highlighting three simple steps that all of us, but particularly those over 60, can take to reduce the risks of listeria:

- check the use by date on food
- check that your fridge is at the right temperature and
- follow the storage instructions on food.

Such campaigns will continue to be a feature of our work over the coming years.

With regard to food hygiene out of the home, we want to help consumers through putting in place a national scheme to give better information on food hygiene in restaurants, cafes and hotels. These will use the information already captured by environmental health officers on their regular visits to businesses. There are a number of such schemes, known as Scores on the Doors, already in operation. These tend to vary between local authorities and are not consistent. Our aim is to have a national scheme consistent across the UK, which can

then be promoted to consumers, and with the information easily accessible, on the doors of premises and on a website.

Healthy Eating

Let me move on now to our work on healthy eating. It is worth a reminder of some of the stark figures that apply. Around 50,000 premature deaths each year from cancers linked to diet or obesity. 30,000 premature deaths from coronary heart disease, where diet is a significant contributory factor. Scientists warn that almost nine in ten adults in the UK, and two-thirds of all our children, will be overweight or obese by 2050. For the first time in history the current generation of children may have shorter lives than we can currently expect to have. It is a major challenge for the UK and one where the Food Standards Agency has a significant part to play.

Our overall objective is to improve the balance of the diet. Again beneath this over-riding objective there are three outcomes. First that retail products and catering meals are healthier. We will continue our focus on salt, saturated fat and sugar. On salt you will know that we have made considerable progress. Average intakes down in the space of 4 years from 9.5g to 8.6g a year – a considerable reduction. Equivalent to 3,500 lives a year saved. The average amount of salt found in branded pre-packed, sliced bread has been reduced by around one-third. But we think that there is still more that we can do. Hence the new 2012 target for bread of 1g of salt, or 400 milligrams of sodium, per 100g. In our consultation we proposed a level of 370 milligrams but we have taken into account industry responses and set the target at 400 milligrams.

We recognise that there remains an issue around ensuring that we take consumers with us. That we educate people's palette to accept reduced levels of salt. And we faced criticism from manufacturers and retailers that we were overlooking the eating out of home market. That is why we are now placing greater emphasis on working with the catering sector. High Street coffee chains, sandwich bars and pub-restaurants have joined with us to make healthier eating easier, making commitments, for example, to reduce salt and saturated fats. So progress being made with the catering sector but more to do. On saturated fat we are following a similar route to that of salt. Combining education of consumers with partnerships with industry on reformulation. Our consumer awareness campaign ran in February and March. It highlighted the risks of too much saturated fat in the diet, and provided consumers with simple tips to follow. The campaign helped achieve an increase in the percentage of adults who are aware of the risks for your heart and arteries from high levels of saturated fat. We heard earlier from Steve Knapton about some of the work which is taking place on reformulation in saturated fat. A number of initiatives are already underway by manufacturers – for example United Biscuits have been promoting McVities Digestives, Rich Tea and Hob Nobs, now with 50% less saturated fat. We are working on the proposed saturated fat targets. Rather than a big bang approach we will be dealing with different sectors over different time scales. The first group will include biscuits and pastry products and we expect to publish the targets for consultation next month.

The second outcome we are targeting is that consumers have the information they need to make healthy choices. In the last few years there has been a lot of energy expended on front-of-pack labelling. We are pleased with the progress that has been

made. An independent panel looking at various front-of-pack nutrition labelling schemes has concluded its findings after more than a year of deliberation. They recommend that a single scheme is needed to overcome customer confusion. And that the scheme should encompass words: “high, medium and low”; traffic light colours and percentage GDAs. In effect a combination of all existing schemes. Our objective now is to get a single scheme adopted by the whole industry. A consultation on the challenges around implementing such a scheme will begin shortly. We are also making progress with caterers. A number of major restaurant chains, cafes, contract caterers and takeaways have committed to provide calorie information to enable people to make more informed choices about what they eat. These include Subway, KFC, Wimpy and Pizza Hut. They will be trialling calorie information in a number of stores this summer and we will be working with them to assess the impact on consumers.

The final outcome is for consumers to understand about food and a healthy diet. We will continue to give consumers information and persuade them to make healthier choices. I have referred already to our saturated fat campaign. And we will be launching a further phase of salt campaigning this autumn.

Conclusion

This paper has given you a fairly rapid overview of our strategic priorities. I want to thank you again for the contribution that the baking industry makes to our work – both on food safety and healthy eating. We are always aware that the Food Standards Agency doesn’t make or sell any food. We rely on others to turn our plans and aims into actions. Keeping food safe and improving the balance of the diet are fundamental objectives for the FSA, and we can all agree that they are worth achieving. I hope that we can continue to enjoy your support in the years ahead as much as we have in our first ten years. Thank you.

Question: Andy Pollard, East Yorkshire. I’m going to be a little bit controversial because for a long time I’ve been seeing overall bread sales fall and I know it’s not politically correct but I feel that the lack of flavor, the work on reducing salt, using fat etc, I agree in terms of the general population’s taste will become accustomed to it but that is only if the lack of salt and lack of fat is in everything else as well, do you think that the bread industry, because we have been very willing to work with you, has put itself into a negative position because of it?

Answer: No surprise to say I would say no. We do work extremely hard to talk to all the sectors that we deal with to try and assess what the appropriate level of progress has been made and what can be made in the future. We are very aware for example now where in certain product sectors, for example we are trying to talk to people about salt and saturated fats almost at the same time and again we recognize that can place particular demands. With the current sort of targets we have just reset for 2010 and in some cases new targets for 2012, I am reliably informed that in all those areas the targets that have been set have already been achieved by at least one operator in the market so clearly there are firms out there who believe these targets are achievable and are already achieving them. I guess we always come back to the actual public health risk and we think that is significant enough that it remains important to try and make slow and steady progress but we recognize it is vital

we take you with us and I think we are still managing to do that.

Question: John Kennedy, Rutland. Whilst the bread has been taking the salt level down to such low levels, one think I have noticed is that in the prepared sandwich market there is still very high levels of salt in there, is there any action being taken to address that issue?

Answer: Yes. Some of the targets refer specifically to sandwiches and as I say our work with the catering sector is particularly focused in on sandwich chains. The other partners in all this whom I haven’t really talked about are some of the NGO’s and obviously there are some pressure groups and other non-Government organizations who campaign, sometimes very vociferously and you might think sometimes we are asking too much but they sometimes have extremely high demands as well, and I know some of them continue to campaign very vigorously on sandwiches as well. So I think that will also lead to further pressure on that sector. The other thing I think will help over time is if we can move towards the universal scheme on nutrition labeling, I think that will help highlight where there are sandwiches with extremely high salt content. Yes this is firmly on our radar.

Question: Peter Jones, Cheshire. Thank you for a very good paper Stephen. I am interested in the balance between legislation and freewill for consumers. On the one hand we have the Government with legislation enforcing compulsory seatbelt wearing. If you look at tobacco we’ve got information on the pack that says it’s going to kill you although it clearly it hasn’t had an impact on everybody in the conference today as we still have some smokers here, and a pricing policy to marginalize it as well, so when you come to food where do you see the balance being struck between those two aspects?

Answer: Well we had an interesting chat about some of this over dinner last night. Clearly there are areas where there are, even the Government and ourselves have legislative powers, but they are principally around labeling. The FSA as a whole, the legal powers we have are almost entirely on the food safety and hygiene side and secondly on the labeling side. There is nothing in discussion with ourselves or the Department of Health, another Government department, at the moment which suggests there would be any legislative action for example to try....., one idea which has been mooted by others for example is a tax on high fat foods. Now it’s the kind of thing I suspect some people would be willing to float but it’s not something which at the moment the Government has any plans to uptake.

Question: Sylvia Macdonald, Croydon. In the publicity from the FSA about salt, it all seems to be negative, you know have less salt, but that’s about deprivation to a lot of people. I don’t see positive publicity about informing people their taste buds will adapt and I see very little evidence of work with celebrity chefs who night after night are pouring the stuff on, so that would be my first question, your response to that.

And my second question is on the table of sat fats, bakery is fifth but you are working with the baking industry to target sat fats first. Why not work with the butchers, they were number one?

Answer: To deal with those questions in order – yes we would like to work with celebrity chefs. I met with someone from Jamie Oliver’s campaign the other week which was an interesting discussion but we haven’t made any progress yet. We have had Marco Pierre White make some very positive comments about

trying to reduce salt levels because he has had some family issues around blood pressure and hypertension. The challenge around positive against negative messages is one, I'm on the communications side of the agency, is one which we are always debating. If you look at our eatwell.gov.uk website you will find that is full of positive messages about how to eat a healthy balanced diet. However when we are talking about trying to get people to improve their diet you end up focusing on actually it's much easier to get people to respond to messages which are about, you need simple straight forward things and in the area of salt that was about essentially looking for products with less salt. But I think if you look at our saturated fat work, and clearly you always learn from each campaign we do, the work we did on saturated fats was entirely perhaps about switching to less saturated fat options, so we weren't saying cut out dairy, we were saying you might want to consider switching to semi-skimmed milk for example. So we do try and ensure that we manage to get messages across to consumers which they can respond to without always sending negative messages.

Answer: I don't know the answer to your second question. I think it's probably about practical issues but the meat industry won't be far behind I can assure you.

Sessional Chairman Sara Autton

Thank you very much Stephen for a very informative paper. We are running slightly overtime but I don't want to squash Bob's enthusiasm. Bob is no stranger to the Society and is indeed very well known personally to many people here today. I am very glad to welcome him to talk about the enzymes in food production, a subject that he more than qualified to explain. Bob has had a long association with research and NPD in the food industry. His work has involved him in the technology of fats, textured proteins and dough conditioners amongst other things. He is currently re-editing the book 'Enzymes in Food Technology' which is due for publication in November in time for Christmas – buy one for your friends!! He has also edited 'Emulsifiers in Food Technology' which is already available. In his spare time Bob is an amateur antiquarian horologist - he restores antique clocks, so no excuses for running over time! Please welcome Bob.

Enzymes in Food Production

Bob Whitehurst

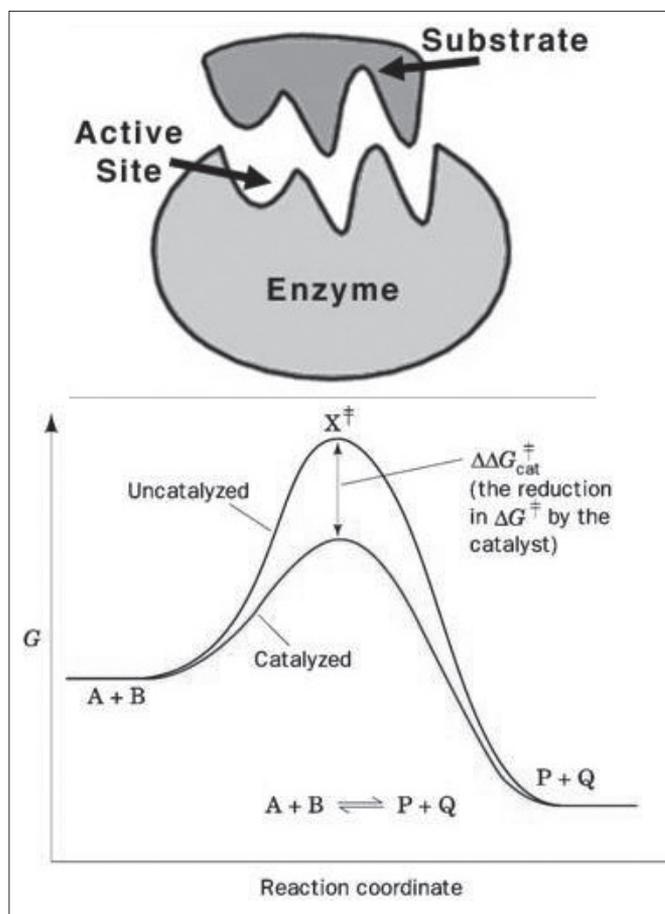


An early commercial use of enzymes is encapsulated in the old nursery rhyme: 'Dicky Dicky Dirt, Your shirt's hanging out, half yard in and half yard out.'. This referred to a "Pure" (puer) collector who collected dog (and other) excrement for the leather tanning industry.

The laboratory extraction of enzymes started in 1874 with the Danish chemist Christian Hansen producing rennet from calves' stomachs. In 1876, William Kuhne proposed that the name 'enzyme' be used and later in 1907 Otto Rohm theorised that excrements exerted their effect because they contained residual amounts of the animals' digestive enzymes. Later experiments showed that it was not

the animals' enzymes that were active, but rather enzymes of bacteria growing in the intestinal tract. OROPON became the first industrial enzyme was being invented for the leather industry.

Enzymes are Functional Catalytic Proteins which facilitate a faster rate of reaction to that which will take place without them.



The top illustration represents a lock and key in terms of enzyme activity and the bottom graph the rates of reaction of catalysed (enzymic) and non-catalysed substrate

Furthermore they are like a human workforce - they have preferred working conditions, may be trained (cultured) to carry out specific tasks, cannot function when their food (substrate) runs out and reproduce better in preferred hosts and conditions.

Why Use Enzymes?

- No need for heat or chemicals upon manufacturing certain products.
- The use of enzymes leads to cleaner products, i.e. less by-products are generated.
- The use of enzymes can lead to the manufacture of natural products.
- Products can be manufactured which are not possible to produce without enzymes.
- Working with enzymes is significantly safer than working with aggressive chemicals.
- Working with enzymes is often sustainable; there is considerably lower environmental pressure.
- It is often cheaper to use enzymes than other catalysts, chemicals or physical processes.
- Enzymes usually require only tiny amounts, i.e. Minimal end product contamination.
- Enzymes are fully biologically degradable.

- Most enzymes are food grade and can be used in food processing.

What are the drawbacks of enzyme usage?

- Enzymes are proteins and are thus sensitive to high temperatures, high salt levels, extreme pH values and many chemicals.
- Enzymes work optimal at a certain pH. This means that sometimes processes need to be adapted or that different enzyme systems need to be developed.
- Enzymes can sometimes easily be overdosed. This can make enzyme usage expensive and therefore optimization is very important.
- Enzymes can be inhibited, either by their natural substrates or substrate analogues, by the products they generate, by other components, such as salt, minerals, etc. This can also make enzyme usage expensive.
- The above lead to the conclusion that enzyme action needs to be investigated carefully and needs to be optimized. This can take a lot of time!

While reading this paper it is important to remember that the structure and function of an enzyme molecule is mainly determined by its amino acid sequence, i.e. its primary structure. Therefore, any change in the properties of an enzyme is always reflected in its primary structure. Likewise, a change in the primary amino acids sequence will be reflected in the 3 dimensional structure.

Production

- Cultured via enclosed fermentation under optimum conditions with preferred nutrients
- Separated by centrifugation and ultrafiltration
- Stabilised by spray drying or low water activity solubilisation.
- Standardised to known activities.

The industrial production of enzymes is via the enclosed fermentation of fungi or bacteria under optimum conditions with their preferred nutrients. Separation of the enzymes produced by the micro-organisms is via centrifugation and ultra filtration. The resulting product is then stabilised by spray drying or low water activity solubilisation and standardised to known activities.

Source organisms may be further classified as;

Natural Found in nature from animal, vegetable, marine, fungal, bacterial origins. Such host organisms may be subject to naturally occurring mutagenesis.

Industrial enzymes for the food industry are not however derived from animal or marine source organisms. This category may be less specific, having greater side activities, and the production may be less efficient.

Protein Engineered In this technique genetic material is structurally modified to obtain a greater specificity or stability of enzyme action. The enzyme is then produced in an optimum host.

GMO Genetic material from a donor is boosted in a normal host or one that provides better production conditions. Enzymes produced via this means are the same as found in nature. To explain GMO further; a donor is the organism that provides the gene of interest. The choice of a proper donor lies in the specific requirements for the property of the gene product (enzyme). A

host organism is the organism in which the target gene can be replicated, transcribed and further translated into products of interest. In most cases the host organism is chosen because of its easy reproduction.

Homologous gene expression Genes of one origin expressed in the same or closely related organism,

Heterologous expression Genes of one origin expressed in another organism

Protein engineering (PE) With protein engineering the process starts with the isolation and characterisation of the required enzyme. This information is analysed together with the database of known effects of amino acid substitutions to produce a possible improved structure. The enzyme is then constructed by site-directed mutagenesis, isolated and characterised. The results of this, successful or unsuccessful, are added to the knowledge database and the process repeated until the required result is obtained.

GMO and protein engineering techniques are used in enzyme manufacture to overcome any one or a combination of the following difficulties: product yields of the desired enzyme may be very limited and the microorganism produces unwanted side activities. Sometimes the microorganism just cannot grow in modern production facilities. Greater specificity of enzyme action can be achieved which results in purer products.

Additionally protein engineering brings even greater specificity of enzyme action, better development and production efficiency and more cost effective products.

Examples of PE enzymes are: a glucose isomerase which is less susceptible to inhibition by the Ca²⁺ present in the starch saccharification processing stream; a lipase which doesn't produce rancid off-flavours in baked products which contain dairy fats; and a shelf life enzyme for baked products which works over a wider range of conditions.

Enzymes are employed in the following sectors of the food industry, although this article will focus on Bread & Flour Confectionery.

Enzyme use in the Food Industry

- Malting & Brewing; glucanase, protease, amylase, xylanase
- Wine; pectinase, glucanase, hemicellulase, -glucanase
- Dairy Products; chymosin, pepsin,
- Protein Modification; protease (hydrolysis), transglutaminase (re-structuring)
- Juice Extraction; pectinase, cellulase, amylase, polygalacturonase
- Fruit Processing; pectinmethylesterase
- Starch Processing; amylase, amyloglucosidase
- Fish Processing; protease, transglutaminase,

Legislation

We should first consider legislation. Enzymes which are destroyed by the process of manufacture of a foodstuff are currently classed as processing aids and to date therefore require no labelling, even when derived from GMO or when the enzymes are protein engineered. However EU regulations (1332/2008) will introduce new labelling requirements for "business to business" products such as dough conditioners. Specifically, when enzymes are used in combination with other ingredients, (as in mixes, improvers, conditioners, etc. as defined in Article 6 (4) of Directive 2000/12/EC) and these

products are not intended for sale to consumers, then information regarding the enzymes used, such as their activity, will have to be specified. Currently it is anticipated that activity may be interpreted as a generic type such as “amylase”, “hemicellulase”, “lipase”, etc. This will lead to considerable extra work and will also lead to significant transparency regarding these products. These articles will apply from 20 January 2010.

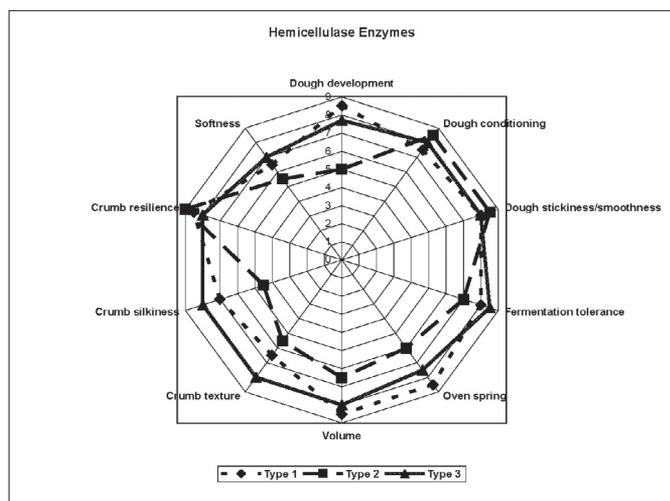
Enzymes for Bread & Flour Confectionery - a Toolbox for Bread

- Amylases - use damaged starch as a substrate, produce sugars and delay setting of crumb structure therefore enabling greater oven spring.
- Maltogenic Amylases – delay staling.
- Hemicellulases – change insoluble hemicellulose to the soluble form thus increasing water absorption and optimising protein use.
- Glucose/Hexose Oxidase – oxygen production via catalase using sugars as substrate for direct or indirect oxidative crosslinking of protein structure.
- Transglutaminase – protein crosslinking (substrate limited)
- Proteases (fungal) – dough relaxation
- Lipase/Phospholipase/Galactolipase – emulsifier replacement using endogenous lipids as substrate.

Enzymes for Bread & Flour Confectionery - a Toolbox for Flour Confectionery & Biscuits

- Amylases - use damaged starch as a substrate, shelf life extension & texture modification.
- Lipase/Phospholipase/Galactolipase - emulsifier replacement, egg replacement/enhancement.
- Protease – protein denaturation

Earlier, enzymes were paralleled to a human workforce having preferred working conditions, may be trained (cultured) to carry out specific tasks, cannot function when their food (substrate) runs out and reproduce better in preferred hosts and conditions. Furthermore as similar job categories have particular skill biases, so do similar enzyme categories. If these can be identified then functional “teams” of enzymes can be assembled. If we use this approach with enzymes then the diagram below for three types of hemicellulase enzymes shows that they are not equal and indeed their characteristics and benefits may vary according to the dough system in which they are employed.



Enzyme application

Considerations (i) Recipe, process, regional variations

There are many different recipes, processes, ingredients and raw materials

- High sugar US style
- French baguette/European style
- European style tin bread
- Crusty rolls
- Sandwich bread
- UK CBP lean
- Burger bun – high sugar, low sugar
- Chinese Steam bread
- High fat/high sugar, high fat/low sugar confectionery products

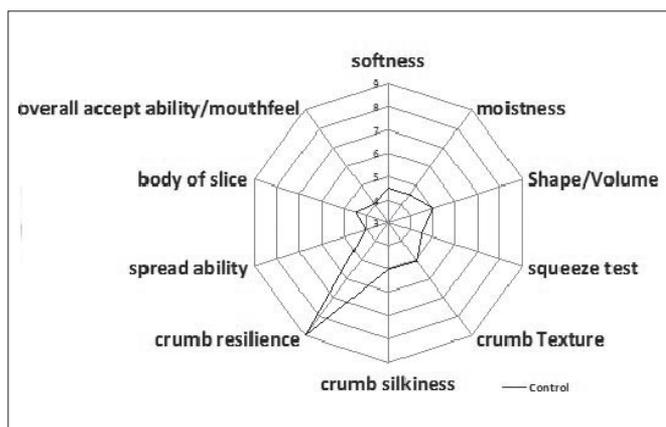
Dough Conditioner Design – What are we trying to achieve with enzymes?

- Which characteristics are we trying to develop for?
 - dough conditioning
 - dough stickiness/smoothness
 - fermentation tolerance
 - dough flow
 - crumb texture
 - crumb resilience
 - crumb silkiness
 - softness / squeeze
 - moistness
 - spread ability
- Select enzymes that meet the required characteristics
- Blend these in to the final dough conditioner

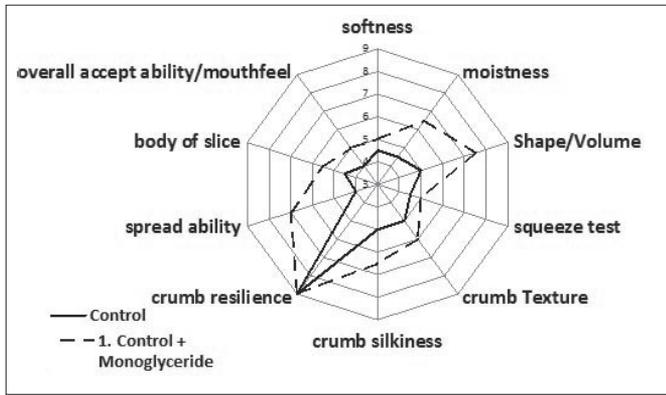
It is important first to consider the application area for an enzyme, taking note of recipe, processes, ingredients and raw materials and then to decide which aspects of dough conditioning we want to impart with enzymes. It is only by using this holistic approach that the best use can be made of enzyme technology.

An example of the above is the improvement of a Brioche product.

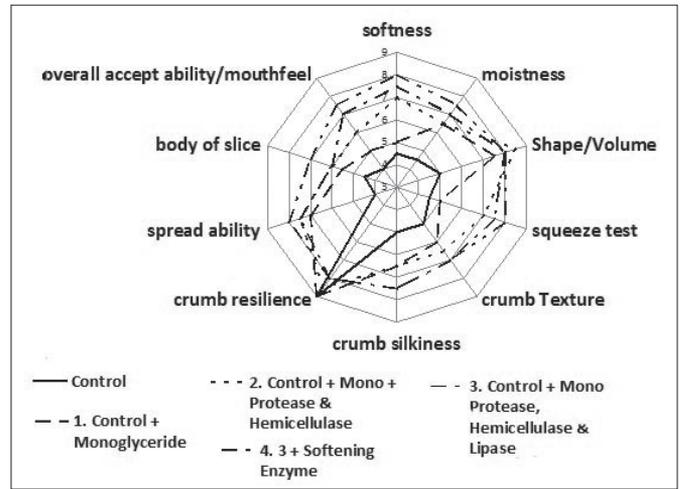
The first diagram represents the base product, which has a high resilience score but with the requirement to improve all other quality parameters. The following series of diagrams illustrate how sequential improvements can be made with enzymes by employing knowledge of their use for this particular product, culminating with the ideal enzyme profile to give optimum product quality.



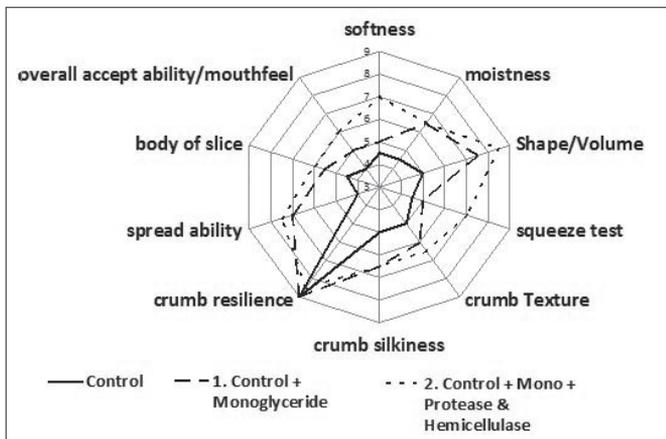
1) Brioche - control
Improvements required in all parameters other than crumb resilience



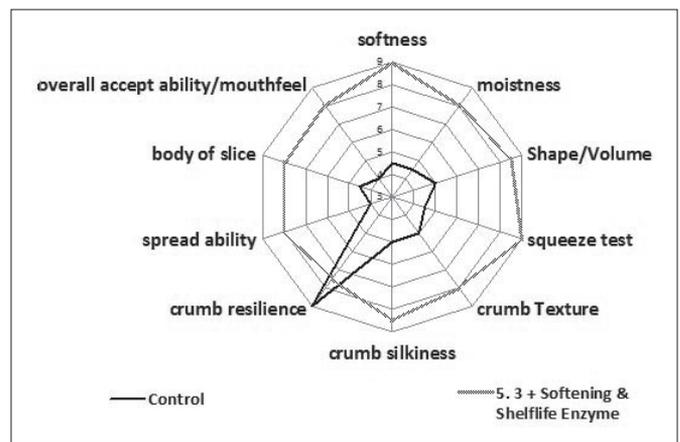
2) Brioche - control plus monoglyceride emulsifier
 Adding monoglyceride maintained crumb resilience and improved all the other quality parameters, particularly spread ability, moistness and shape/volume



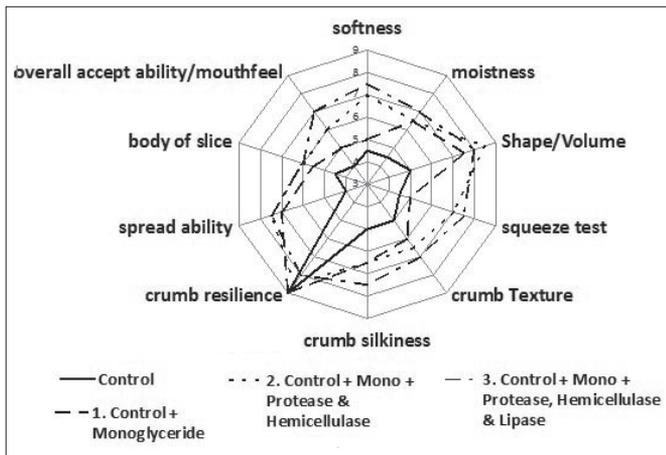
5) Brioche - formulation 4 plus a softening enzyme
 Further overall improvements



3) Brioche - control plus MG and P&H
 Further improvement in terms of softer product and better shape and volume



6) Brioche - formulation 5 plus a shelf life enzyme that gives the final formulation. The spiders web diagram shows that the Brioche now meets all the specified quality parameters



4) Brioche - formulation 3 plus a lipase enzyme
 Further improvement in terms of moistness and softness

Finally, having formulated our dough conditioner, we need to choose an appropriate delivery system, from conventional dough conditioner powders, lipid based fluids or the latest aqueous technology, which has been enabled by the potential of lipases to replace emulsifiers.

In conclusion

Determine your objectives - plant, process, flour (or key ingredient) and product characteristics required
 Select your enzymes via their characteristics, synergies and usage rates for required effects
 Check their synergies with macro ingredients such as oxidants and emulsifiers
 Select an appropriate delivery system in terms of the type of dough conditioner.

Acknowledgements

*Darrell Ward; Novozymes for permission to use the Novamyl structure and size information.
 Maarten van Oort; AB Mauri B.T.G. for invaluable discussion.*

Question: Katherine De Wint. We are all probably using a lot of these enzymes already, but what advantage has been made in quick detection of what level of enzymes you have in your finished blends and how can we use those to validate the blending processes that are being used to manufacture them into our bags of magic dust?

Answer: There are a number of bioassays for enzymes. Enzymes are enormously difficult to analyse. The bioassays are very good for single enzymes, the problem we have is that invariably because enzymes are standardized to a known activity making it easier for us to dose properly, they are often standardized with something like wheat flour or maize flour, sugars, that sort of thing, which do also happen to be the substrate for the enzymes. As soon as you put them into an assay the enzymes look at their surroundings and say 'yippee we've got a bit of food around us' and they start consuming it! So most enzyme assays are giving the enzyme the substrate it likes to eat and are not actually analyzing the enzyme directly under certain usage conditions. So yes there are bioassays available. Novozymes do a number of my assays but I'll be quite honest, whenever I formulated in the past, I've made sure that I have a cocktail of enzymes in my formulation so that my competitors cannot analyse it very easily because our intellectual property and NPD work is sewn up in that enzyme blend. It's not in our interest to provide easy means of analysis - we just hope you'll trust us!

Question: Delegate (Question and delegate's name was distorted on the recording. The following question is therefore based on Bob's answer. BSB Proceedings Editor) Do your industrially produced enzymes compare with or match those found in nature and how safe is their use? There have been suggestions recently from the real-bread campaign that enzymes are unsafe and that enzymes derived from animal sources are being used for bread production, making it unsuitable for vegetarians!

Answer: Yes we usually use enzymes that are very close to those used in nature. For instance hemicellulase is made up of amylases, lipases and oxidases - you can find them all in wheat flour. It's just that they are inhibited within the wheat berry until it is ready to germinate basically. Enzymes are in wheat because wheat is actually a seed and they are there to activate the seed to produce new plants, so they are inhibited to a certain extent in flour produced from the wheat. Because the wheat enzymes are inhibited we add enzymes as a slightly different way to improve the properties of the gluten in the flour.

All enzymes are proteins and are denatured during the baking process. They come out as bits of amino acid, polypeptides and dead protein. Enzymes for use in food are subjected to very stringent toxicological health and safety tests before they are approved for use. There are safety issues with enzymes but they are nothing to do with their incorporation into foods. The only danger with enzymes is if you buy them in a fine powder form, which are available if you go to the wrong supplier, instead of in a granulated form. If you breathe in the fine powder enzymes you can get a version of asthma. But that's no different to wheat flour, rice flour, any fine powder like that which is just as much an allergen as enzymes. I know of no cases whatsoever, and there are none reported, of anybody getting an allergy from an enzyme, whether its used in bread, fish sticks, from fondant centres for chocolates which are made liquid with invertase, etc, etc - there's no evidence of this whatsoever. I am sure if I was in the 'real-bread' lobby I would have great fun criticizing enzymes. However I wouldn't be working in the food industry and promoting the use of enzymes in food, if I thought they were dangerous!

There are enzymes which come from animal substrates but they only exist in research. Enzymes from animal organisms would be very difficult to culture and would be highly inefficient. It is

much simpler to culture enzymes from bacteria, fungi, and moulds. I'm being told there are enzymes from animal sources organisms but I wouldn't know where to buy them. I've asked colleagues in the food enzyme business over the last week if they know of a source of supply and the answer has consistently been that they only occur in research. The only enzyme I have ever used from an animal source organism for experimental purposes was phospholipase and that came from the Mexican Black Diamond rattlesnake venom. Rattlesnakes are very good at using enzymes as venom but I think that enzyme cost me about £100 for 100 milligrams, so it was not very practical.

Sessional Chairman

Thank you once again Bob for a very informative paper. Now Andy, over to you.

The Chairman

I am sure you will agree, as always a fantastic list of papers, informative, entertaining, and completely different in context but equally as interesting. As I said this morning we are very keen to get your feedback about the conference, particularly on the new format and venue, so please do fill out and return your evaluation forms on the way out. Have a safe journey home and we hope we will see you again at our next conference in 2010 and we hope that some of you who are here as guests will become members. Next time you come bring a fellow baker, customer, colleague, whatever, with you! We would like to see many more people enjoying what we think are fantastic conferences. Thank you very much for attending and have a safe journey home.



From left, Chairman Andy Pollard, Sessional Chairman Sara Autton, BSB Treasurer Jim Brown and Sessional Chairman Keith Houlston



BSB Committee members Daren Roots and Paul Weston

MEMBERS

Abass	Ade	British Bakels Ltd	Dyson	Eric	Tom Chandley Ltd
Ablewhite	Graham	Sparks Confectioners Ltd	Dyson	Martin	Tom Chandley Ltd
Adams	Thomas	Oliver Adams Ltd	Edge	J Martin	Park Cake Bakeries Ltd
Alderson	Geoff	Scobie McIntosh Ltd	Edwards	Paul	British Bakels Ltd
Allen	John	MTA Associates	Edwards	Neill	Synergy UK Ltd
Amos	David	Edme Ltd	Edson	Mike	AAK Food Service
Astor	James		Elliott	Ian	Rich Products Ltd
Autton	Sara	Fermex International Ltd	Ellis	Andy	Allied Bakeries
Bagshaw	Mike	Synergy UK Ltd	Entwistle	Gary	Birds (Derby) Ltd
Ball	Richard	Edme Ltd	Evans	Geoff	G B Plange
Balmer	Stephen	Consultant	Farnsworth	Patrick	
Bamford	Charles	Paddock Bakeries Ltd	Farrow	Paul	British Sugar plc
Barker	Paul	Cinnamon Square	Ferguson	Ross	James Fleming & Co Ltd
Batchelor	Philip	Memory Lane Cakes	Flounders	Andy	Danisco UK Ltd
Beaney	Chris	NAMB	Foster	John	Foster's Bakery (Staincross) Ltd
Beasley	Andrew	Firmenich UK Ltd	Fowler	Alf	
Benson	Richard	F R Benson & Partners Ltd	Franklin	Yolanda	Muntons plc
Bent	Alan	Consultant	Fuller	Andrew	Muntons plc
Berry	Philip	Synergy UK Ltd	Garner	Edward	TNS Global
Bevan	David	Fermex International Ltd	Gascoyne	Fred	Eurobuns
Brant	Richard	Premier Foods	Gibbs	Gary	British Bakels Ltd
Binns	Kevin	Memory Lane Cakes	Giles	Brent	Fudges Village Bakery
Birznieks	Aivars	Smiths Flour Mills	Glennon	Ken	La Fornaia Ltd
Bodman	George	Vandemoortele UK Ltd	Glover	Derek	Molda UK Ltd
Bole	Clive	Muntons plc	Glover	William	Glover's Bakery Ltd
Bowers	Rhoda	Betty's Bakery	Glykys	Evelthon	The Model F/Sta Bakeries Ltd
Bridson	John	Consultant	Godfrey	Stephen	Cereform Ltd
Brown	Jim	Hon Treasurer	Goswell	Vivian	Goswell Bakeries Ltd
Brown	Carl	Dawn Foods Ltd	Grace	Ralph	British Bakels Ltd
Brown	Paul	Sweet Success	Hall	John	J Hall & Sons (Bakers) Ltd
Burrell	Richard	Allegra Ltd	Hallam	Stephen	Dickenson & Morris Ltd
Burton	Alec	RBS Food Products	Hallet	Ray	Premier Foods
Burton	Charles	Bolands Mills	Haszeldine	Richard	Premier Foods
Byrne	Sharon	Secretary	Hawkins	Christopher	Bakery Computer Services Ltd
Carr	Mike	Kerry Foods Ltd	Hawkins	Ian	Bakery Computer Services Ltd
Casewell	Martin	McCain Foods	Haynes	John	JRH Associates
Catterall	Paul	CCFRA	Hemming	Daniel	Allied Mills
Cauvain	Stanley	Baketrans	Heygate	Paul	Heygates Ltd
Chell	Mike	G B Plange	Hodge	Kevin	
Church	John	Deeside Bakery	Hogg	Fraser	Macphie of Glenberrie
Churchill	Martin	Sonneveld UK & Ireland	Holling	Mike	Birds (Derby) Ltd
Clarke	Brian	Mapleleaf Bakery UK	Hollyman	Ian	British Sugar plc
Cliffe	David	Calibre Control International	Hooper	Andy	British Bakels Ltd
Coniffe	John	Swiss Oven	Horan	Frank	Fuerst Day Lawson Ltd
Connell	Ian	Warburtons Ltd	Houliston	Keith	British Bakels Ltd
Cook	John	Packaging Liaisons	Hughes	Derrick	Cleanbake Ltd
Cook	Tim	ADM Milling Ltd	Hughes	Shaun	Cleanbake Ltd
Cooper	David	Fermex International Ltd	Humber	Terry	Kluman & Balter
Cooper	Julian	British Sugar	Hunt	Julian	FDF
Copland	Tony	Heygates Ltd	Huscroft	Christopher	
Cottrell	John	ADM Milling Ltd	Irwin	Niall	W D Irwin & Sons Ltd
Coup	G E	Golden West Foods	Jackson	Neil	British Society of Baking
Creber	Olivia	Witney Cake Company	Jarman	Mike	E Botham & Sons Ltd
Day	Roger	W C Rowe (Falmouth) Ltd	Johnston	Ken	Food Faraday Processing
Dean	William	Deans Shortbread	Jones	Graham	Logistics Planning Ltd
Dinsdale	Andrew	Novozymes	Jones	Peter	Speedibake
Ditty	Robert	Ditty's Home Bakery	Jones	Philip	Gerrards Confectioners (Nth
Dobbie	Ian	Delifrance UK Ltd	Wales) Ltd		
Dobbie	Neil	Allied Bakeries	Jones	Wyn	Food City Ltd
Donovan	Nick	Allied Mills	Jordan	Dinnie	Kudos Blends Ltd
Dryden	John	AAK Food Service	Kemp	Derek	Bakemark UK

Kennedy	John	Greens Flour Mills Ltd	Smith	K F J	Dawn Foods Ltd
Kinney	David	Irish Bakels Ltd	Smith	Richard	ADM Milling Ltd
Kirkwood	Gordon	Eccelso Ltd	Smith	Simon	Aromatic UK Ltd
Knapton	Steve	ADM Trading	Solway	Simon	Unifine F & Bi UK Ltd
Knott	Peter	Marks & Spencer	Somal	Aja	Costco Uk Ltd
Klasens	Ruud	Sonneveld UK & Ireland	Spickett	Colin	Spicketts the Bakers
Lancaster	Gary	Edme Ltd	Staniforth	Tony	Premier Foods
Langslow	John	Country Milk Products	Stevenson	George	Mathieson Bakeries Ltd
Leggett	Ronnie	Macphie of Glenbervie	Stewart	Gary	Brennans Bakeries
Lester	Colin		Stocker	Barry	Marks & Spencer
Laidlaw	Ken	Premier Foods	Storer	T K	Pukka Pies Ltd
Levaggi	Mike	Handmade Bakery Group	Street	Joe	Fine Lady Bakeries Ltd
Lindsay	John	Bakemark UK	Stuart	Keith	R T Stuart Ltd
Little	Kim	Campden & Chorleywood FRA	Suett	Andrew	Muntons plc
Lomax	Colin	Premier Foods	Sweeney	Dennis	Macphie of Glenbervie
March	Graham	Frank Roberts & Sons	Teasdale	John	B S Teasdale & Son Ltd
Marr	Alan	Auld's Delicious Desserts	Thomopoulos		George Rich Products Ltd
Marr	Ian	Thomas Auld & Sons Ltd	Thomson	Peter	Danisco UK Ltd
Marriage	George	W & H Marriage Ltd	Tomkins	Christopher	Kistrucks Bakeries
Marsh	David	Benier (UK) Ltd	Turner	Graham	
Martin	Neil	Martins Bakers & Sandwich Makers	Turner	Paul	Danisco UK Ltd
Matues	A M	Macphie of Glenbervie	Vasse	Carl	Kerry Bio-Science
Matthews	Paul	F W P Matthews Ltd	Ville	Stephen	The Bread Roll Company
May	Matthew	Odlums	Wadsworth	Bill	Greggs plc
McCabe	Douglas	James Fleming & Co Ltd	Warburton	Brett	Warburtons Ltd
McKane	Ivor	Bakemark UK	Ward	S K	Ambit International Ltd
McIlwrick	A C	Premier Foods	Ward	K J	Ambit International Ltd
Meade	Tony	Oliver Adams Ltd	Ward	C J	Ambit International Ltd
Mifsud	Andrea	Premier Foods	Waterfield	Albert	Waterfields (Leigh) Ltd
Mills	John	Memory Lane Cakes	Watler	Joanne	Allied Bakeries Ltd
Mizon	David	Pin Point Training	Weatherley	Adrian	British Sugar plc
Molyneux	Patricia	Premier Foods	Wegrzyn	John	Peerless Food Products
Montagu	Robert	Walkers Midshire Foods	Wells	Chris	Dawn Foods Ltd
Moon	Stephen	AB Mauri	Wertheim	A	Chalfont Products Ltd
Mooney	Trevor	Arthur Chatwin Ltd	Westaway	Richard	Cereform Ltd
Moreton	David	Memory Lane Cakes	Weston	Paul	Benier (UK) Ltd
Morrant	Chris	Bakemark UK	Wheeler	Russell	S Black Ltd
Morrow	Paul	British Bakels Ltd	Whitehead	Simon	Patak's Breads Ltd
Mulally	Martin	G B Plange	Whitehurst	Robert	Kerry SPP
Nicholson	Ian	Oats Royd Bakery	Wickramasingha		Ramya Ceylon Biscuits Ltd
O'Brien	Derek	Dublin Inst of Technology	Williams	Peter	Simmons (Bakers) Ltd
Park	Brian	Allied Mills Ltd	Wood	C J	Country Style Foods Ltd
Parker	Bob	BTS International	Wood	Albert	Consultant
Pearce	Alan	W C Rowe (Falmouth) Ltd	Woodfield	Roger	Cereform Ltd
Pearson	Laurie	Heygates Ltd	Woodgate	Julian	G R Wright & Sons Ltd
Perkins	D C	Aromatic UK Ltd	Woollard	David	Arcall plc
Philpott	Steve	Baker Perkins	Wooster	Simon	Edme Ltd
Pill	Vicky	British Bakels Ltd	Wright	David	G R Wright & Sons Ltd
Pollard	Andrew	Cereform Ltd	Young	Mark	Ingram Bros (Glasgow) Ltd
Polson	Gordon	Federation of Bakers	Young	Callton	FDF
Powell	David	Rich Products Ltd			
Price	Paul	Allegra Ltd			
Roberts	David	Frank Roberts & Sons Ltd			
Roberts	Mike	Frank Roberts & Sons Ltd			
Roberts	Adrian	Vandemoortele UK			
Roots	Daren	Danisco			
Sarafilovic	Andrew	William Stephen (Bakers) Ltd			
Shaw	Alan	Alan Shaw Ltd			
Shaw	Keith	Quoteforce Ltd			
Shepley	John	AAK Food Service			
Slatter	Paul	Reynards London Ltd			
Slattery	John	Slattery's Patissier and Chocolatier			
Smart	David	Greenhalghs Craft Bakers			

HONORARY MEMBER

Grieves Jean

RETIRED MEMBERS

Boardman	Alan
Charman	George
Coopland	Frederick
Ferguson	Sam
Fox OBE	F F
Gant	W J
Greenwood	Anthony
Hastie	Neill
Hurtz	E G
Kirk	Ronald M
Leach	P
Littlewood	John
Llewellyn	William P
Moss	Tim
Mulley	Ken P J
Melling	Ian
Packham	John W
Pendlington	Dr Alan W
Pennington	Marshall
Riley	Derek B
Russell-Eggitt OBE	P W
Sheppard	R
Slingsby	Tony J
Stevenson	M R
Ward	Raymond M
Wallington	David J
Weeks	Hugh F B
Whitmore	J E

