

All sweetness and fight

When challenged, sweetener manufacturers will defend their Ingredients tooth and nail. That could be because, as **Paul Gander** discovers, in terms of future potential there is much to defend

To the casual observer, it can sometimes seem that sweetener manufacturers spend more time in their lawyers' offices than they do in the lab.

As in other parts of the functional ingredients market, higher NPD costs are making manufacturers of sugar replacers ever more determined to protect their investment. And yet that protective instinct seems to be more highly developed in this sector, with many manufacturers battling on at least two fronts.

Firstly, they are busy defending their intellectual property (IP) from competitors eager to poach potentially lucrative markets. And secondly, some are actively calling their critics and denigrators to account. So for example, there cannot be too many cases in the ingredients world similar to the current dispute between aspartame manufacturer Ajinomoto and UK retailer Asda. Last April, the ingredients company served a writ on the chain for defamation after Asda bracketed aspartame with other substances described as 'nasties' on its own-label products.

As part of the Wal-Mart group, Asda presumably has deep enough pockets to pay for the best lawyers. So it is revealing that the retailer's defence is understood to hinge, not on the possible scientific merit of applying the term 'nasty' to the sweetener, but on the negative implications (or lack of them) of the term.

This is despite the fact that some research has suggested links, in the case of Italy's European Ramazzini Foundation (ERF), between aspartame and cancer in mice and rats.

Weight of opinion

But tellingly, this work has not prompted the various food authorities to alter their guidance regarding aspartame. For instance,

| Global volume consumption of some key sweeteners, tonnes: Euromonitor | | |
|---|---------|---------|
| Sweetener | 2002 | 2007 |
| Sorbitol | 405,796 | 512,141 |
| Maltitol | 47,557 | 70,610 |
| Isomalt | 29,963 | 53,632 |
| Aspartame | 22,009 | 27,685 |
| Erythritol | 8,278 | 12,145 |
| Acesulfame K | 5,628 | 7,600 |
| Sucralose | 4,166 | 6,307 |

the European Food Standards Agency (EFSA) reviewed the first of two ERF studies in 2006, identified flaws in the research, and concluded it had no reason to revise its existing Acceptable Daily Intake (ADI).

More recently, ERF has completed the biophase of a research study into sucralose, and hopes to publish its results this year. Director of resource development Kathryn Knowles is not spelling anything out, saying only: "Sucralose unfortunately has a similar testing history to aspartame."

At Leatherhead Food International (LFI), head of food innovation Alice Pegg argues, "It's sad that there is so little trust in the food industry. Why should one person's research be more trusted just because they're not in the industry?"

When it comes to protecting IP, producers of polyols and other bulk ingredients can be just as tenacious as those of intense sweeteners. French-based Roquette, for instance, has been putting up a determined defence of its patents with regard to crystallised maltitol.

External communications manager for the nutritional business unit Emily Lauwaert says, "Sugar-free is a highly active market, and figures suggest it will continue to grow in importance over the next few years. Naturally, when you have a high-performance sugar-free ingredient, you have to protect it."

Roquette hopes maltitol will be an essential ingredient in the reduced sugar market

Polyol promise

At the February 2008 ProSweets show (alongside ISM) in Cologne, Germany, Roquette relaunched its maltitol as SweetPearl. "There is still some work to do on optimising taste and quality, but we anticipate great potential in the reduced-sugar and no-added-sugar chocolate market," says confectionery development manager Yves Le Bot.

Roquette is focusing on Europe, and with good reason. The company quotes Euromonitor data showing a peak in worldwide consumption in this sub-sector in 2004 of €371mn followed by a dip. European sales of no-added-sugar chocolate, on the other hand, grew consistently year-on-year from €104mn in 2002 to €148mn in 2007. Sweet bakery is also a target.

Another polyol with huge promise is erythritol. Unlike other polyols, it is produced through fermentation rather than hydrogenation, was recognised by EU authorities late last year to be a zero-calorie sweetener, and is tolerated far better by the diges-

Erythritol's lack of laxative effect makes it suitable for use in dairy items

"Cost reduction is often the key to the use of sweeteners, and that will probably remain the case," she predicts. But in different applications, flavour profile (and masking potential) as well as processing performance are likely to be of critical importance.

status, there is a chequered geography - as well as history - behind the plant.

Almost a decade ago, the European Commission Committee on Food concluded that stevioside "is not acceptable as a sweetener on the presently available data". Now, regarding EU approval for new sweeteners, a spokesman for EFSA says: "Two applications have been received concerning stevia, but final opinions on these are not due until the beginning of 2010 at the earliest."

These regulatory discrepancies are not uncommon for new sweeteners, and highlight some of the challenges facing end users in the international food industry. In this case, it may delay international roll-out of products for Coca-Cola and PepsiCo which, respectively, are using reb A products from Whole Earth (PureVia) and Cargill (Truvia).

As Elizabeth Fay, director of public policy at Cargill, explains: "Around the world, stevia products vary widely." She adds, "The safety studies for Truvia rebiانا do not open the market for other stevia-

The examples of erythritol and rebaudioside A demonstrate that there is another front on which sweetener manufacturers have to fight: regulatory status and approval'

tive system. Of this last point, European head of marketing for Cargill Sweetness Henry Hussell explains, "The fact is recognised, but we're still doing the work to establish dosage levels."

Pegg at LFI enthuses, "The fact that erythritol does not have a laxative effect means that it could be used in those products that you are likely to eat more of, such as ice cream and dairy items."

So what stands in the way of a general stampede in the direction of erythritol? Price, for one thing. "It is more costly than sugar or other polyols," Hussell admits. "Manufacturers need to establish added value for the consumer."

As in pharmaceuticals, the product lifecycle from protected property to generally available commodity has become familiar in this sector. LFI's Pegg points out that an ingredient such as aspartame is now effectively a commodity product, while the partnering of aspartame with acesulfame K is "the classic sweetener system".

As Tate & Lyle states, the heat stability of sucralose has won it significant markets in areas such as sweet bakery. In confectionery, maltitol has substituted sorbitol in some applications, says Roquette's Le Bot. "Maybe this is because the taste of maltitol is more suited to fruit-based flavours, while sorbitol's cooling effect is better for mint," he suggests.

Regulatory hurdles

The topical examples of erythritol and, even more recently, rebaudioside A (reb A or rebiانا) demonstrate that there is another front on which sweetener manufacturers have to fight: regulatory status and approval.

Reb A and stevioside are the two key sweetener products from the plant Stevia rebaudiana Bertoni (stevia). Products of the plant have long been used in Latin America (where it originates) and the Far East. Last year saw reb A gain approval in Australasia and the US. But with regard to regulatory

based sweeteners,"

Meanwhile, an ongoing re-evaluation of all food additives by EFSA includes sweeteners. With regard to timings, the spokesman will only say: "No firm deadlines have been fixed as yet for any particular sweeteners."

In general terms, Pegg at LFI expects to see higher regulatory testing hurdles in future. "And given the huge cost of development, any new sweeteners will have to demonstrate additional benefits, as with sucralose's bake-stability," she suggests.

According to Tate and Lyle, overall growth in the sweeteners market stands at 2-3% a year. Within this total, the changing status of certain ingredients may feed into more new product launches in given categories such as ice cream, chocolate or baked goods.

Enduring concerns over sugar, improving sweetener systems and lower costs mean that both new and established products will continue to find enthusiastic users. Ifi