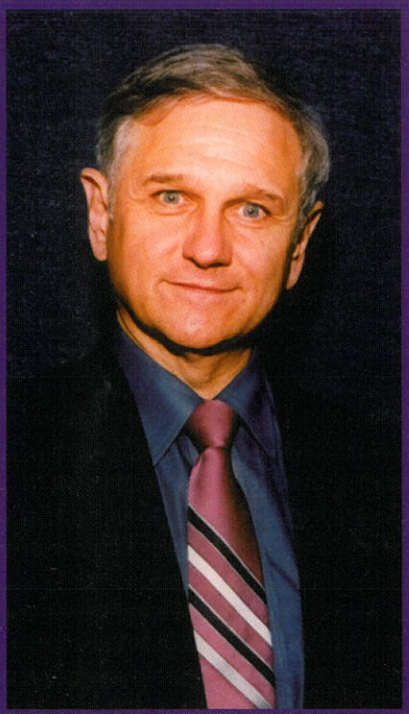
Nutraceuticals – once again?

Bob Boutin, Knechtel Laboratories, Skokie, Illinois, USA considers the latest trends and outlines future development opportunities



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Much has been written about healthy treats, functional foods or nutraceuticals, but the continued international growth of this category warrants a few more comments.

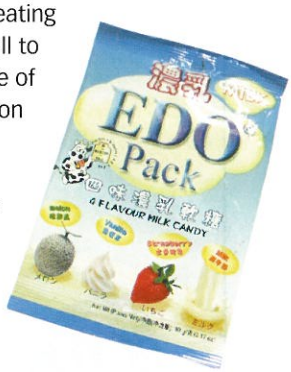
For many US confectioners, including myself, that which began as a 'fad' back in the late 1960s and early 70s has gone full circle and seems to have evolved into a stable, but growing market. Last year, the US confectionery market grew by around 4–5 per cent, whilst the nutraceuticals sector showed figures in the 20+ per cent range, yielding an $8+ billion (£4.3+ billion) market share. As it is an evolving market, forecasts for the future continue to look promising*.

Reasons for the evolution

I mentioned that the nutraceutical market was evolving and maybe I should expand a little; what started out as a healthy mucilage/granola-type bar or other product that was good for you, but not overly 'tasty', has been modified or reformulated. For example, neutraceutical bars come in many formats such as chewy, hard, enrobed (chocolate, peanut butter and yoghurt), layered (caramel, nuts and fruit) and now attract even the most discriminating confectionery consumer. In addition to these organolyptical changes, nutritional adjustments were also being made; low-calorie, reduced fat, all-natural, high-protein and, most recently , 'low or no carbohydrates'. All these changes or evolutions generated wider consumer acceptance and additional growth for the market. Fortunately for confectionery/ neutraceutical manufacturers, this growth meant greater profits. Although some additional manufacturing steps are required for the production of nutraceutical items, their significant higher market prices (usually double that of regular confection) usually generate higher profit margins. Furthermore, minimal capital investment is required (or in simpler terms, most nutraceuticals can be manufactured on our existing equipment).

Chocolate – the ultimate neutraceutical?

Are nutraceuticals here to stay? Well, I think so... newer trends seem to be arising in the areas of vitamins, minerals, satiety control, health improvements (i.e. isoflavones for cancer and glycomacropeptides for strengthening the body's immune system), low glycemic index, and the recently reported benefits derived from eating dark chocolate. It is now reported that dark chocolate contains four to six times the polyphenol antioxidants found in fruits and vegetables. Maybe Ponce DeLeon, whilst exploring the New World and searching for the famed fountain of youth with the Aztecs found the secret – not in the water, but the cocoa drink they gave him (chocolate). Wouldn't it be great if eating chocolate allowed us all to reach the grand old age of 100+ years? Research on those benefits derived from chocolate consumption indicates very promising facts (i.e. chocolate's fatty acid profile may reduce cholesterol levels and cocoa butter itself does not affect the body's cholesterol balance).



These sweets are sugar-free, contain eight vitamins and bifidus bacteria and are designed to form part of a calorie-controlled diet

Whilst the demand for new nutraceuticals is growing, hurdles arise for the technologist in their formulation. Many ingredients have harsh or unpleasant flavours or are unstable when interacting with other ingredients or the carrier base. This is especially true since nutraceuticals have expanded into confectionery types other than bars. Development has entered unchartered territory in many instances and care has to be taken. But success is possible!

Maybe the best way to highlight this care is to offer an example resulting from my own research. Knechtel was given the task of formulating a small, bite- sized, high-protein, enrobed chew.

Photo: Koelnmesse

These tobacco-flavour candies from MeierKurt of Rosengarten, Germany, seen at ISM 2005, can assist with smoking cessation. They are also sugar-free and contain Vitamin C

This product was to be formulated with dairy or milk proteins because of their nutritional benefits. We created an excellent caramel chew that contained the desired level of protein per chew and tasted great. Everyone was delighted until the results of our analytical tests and feeding study arrived showing that whilst we had achieved the desired level of protein, somehow during processing we changed the nutritional benefits of the dairy proteins (i.e. the Malliard Reaction occurring during the manufacture of the caramel chew). It seemed that the protein's new complexed form no longer possessed the same nutraceutical benefits as before. Needless to say, our 'bubble burst', but all was not lost. We changed base direction, going from a caramel to low-temperature, high-protein nougat. This resulted in a product with similar organolyptical characteristics and no major changes in the nutritional benefits of the protein.

Counteracting processing effects

Although heat was our enemy in this instance, there can be other influences. For example, high levels of fat in a formula can mask the absorption of an active ingredient; water or moisture can cause reactions to occur amongst the ingredients or, at the very least, its availability can cause the bars to become hard and brittle over time, as seen in many high-protein bars. What started as a nice, smooth, creamy paste, has resulted in a firm, hard, unacceptable mass through the continued hydration of the protein. Can we factor these characteristics into our formulation? Yes... we can 'hide' off-tasting active ingredients in the chocolate matrix or pre-hydrate the proteins so that moisture scavenging is reduced.

It is important to remember that these nutraceutical herbs, active ingredients or proteins interact with other ingredients. Unique processing scenarios are sometimes required, and depend upon their specific characteristics. This category's growth continues to look promising as products initially introduced in Europe or the USA are now being imported or manufactured locally in many other regions of the world (i.e. South East Asia, China, South America, etc). Why do I think its growth will continue? I think all of us are looking for those products that will supply that 'something extra'. Whether the product allows us to eat a little more without gaining weight, lose weight without dreadful exercise, live a little longer, or be a little healthier etc., it becomes an 'added-value' product for the consumer. These nutraceutical treats allow consumers to consume herbs, actives or proteins in a convenient, tasty manner. I believe the growth of smaller, bite-sized or multi-pack packages will continue to grow, because they are easy to carry and allow all-day 'grazing' or snacking. As new 'fads' arise, new nutraceuticals will develop to provide consumers with the variety, convenience and benefit they seek to derive from confectionery. Finally – remember that the key to nutraceutical or any confectionery success remains taste, taste and taste!! ■

These acerola icegloo sweets from Ferrero are sugar-free and rich in Vitamin C

*NOTE: Obtaining good market data is always difficult, but generally the US confectionery market is estimated to be in the $11 billion (£5.8 billion) range with growth in 2003 of 4–5 per cent. The nutraceutical market is 12–15 years old (realistically), estimated at $8+ billion (£4.2 billion). In 2003, a 27 per cent growth was reported.