

Exploring Alternative Delivery Systems

Even as consumers become more interested in the beneficial properties of nutraceuticals, they're looking for easier ways to consume them. Beyond just simple tablets and capsules, manufacturers are exploring new delivery methods to ensure bioavailability of efficacious quantities of the desired nutrients. Here, three industry manufacturers discuss delivery options.

Effervescent Products

In the early 20th century, seasick passengers found bicarbonates were very effective for short-term relief of seasickness. A century later there is, and continues to be, growing acceptance and interest in this user-friendly dosage form. Dosing of large quantities of nutritional supplements is easy with effervescent products, particularly when many supplements require incremental daily dosing. An effervescent product allows high doses of amino acids, fiber, vitamins, minerals, herbal ingredients and pharmaceuticals to be dissolved as a pleasant tasting drink and consumed at one time in 4 oz. to 8 oz. of water. Effervescent products allow for very fast absorption into the bloodstream due to the effect of the buffered drink on the stomach. In short, the stomach empties much more quickly into the small intestine, where the majority of ingredients are absorbed. Effervescence is the easiest way to naturally buffer a glass or bottle of water to shorten the stomach emptying time and to greatly reduce the amount of stomach upset and feeling of nausea caused by taking too many compressed tablets or capsules at one time.

The biggest challenge for companies interested in marketing effervescent products is educating the average consumer about the benefits. Consumers find it difficult to justify a perceived cost of two- or three-times per tablet when compared to a bottle of standard tablets or capsules. However, effervescent products require only once daily dosing, instead of taking two, four or six compressed tablets to achieve the same level of nutrient delivery. Compounding the issue is product labeling, which can convince consumers they are getting an inexpensive tablet or capsule when, in fact, they are paying more on a daily basis than with a comparable effervescent product.

Hundreds of published clinical trials support the benefits of effervescent delivery systems. As more companies embrace this delivery form and promote its benefits, effervescent dosage forms will continue to capture a greater share of serious consumers. These consumers care about price per dose of product and understand effervescent products are absorbed into their systems as intended.

The nutritional industry should be looking for ways to provide new and innovative products to its customers. The effervescent delivery system is one of several that should be seriously considered.

Information contributed by Fred Wehling, president of New Hope, Minn.-based Amerilab Technologies (www.amerilabtech.com).

Gum Systems

The growing popularity of nutraceuticals among consumers is placing an increased emphasis on making these products easier and more pleasant to consume. One major tactic being pursued by pharmaceutical and nutraceutical companies is to look at innovative vehicles for delivery of functional products. One such concept is compressed powder gums.

The compressed powder gum approach allows for easy and pleasant administration of active principal ingredients, and makes them easy to consume at any time. Chewing gum is particularly suitable for a pleasant, sub-lingual absorption of actives. In addition, when low temperature processing is needed to accommodate the use of active ingredients that are heat-sensitive—such as bioactives and phytochemical components—compressed gum is a very suitable vehicle.

A potentially major metamorphosis of chewing gum from confectionery snack to attractive functional food has begun. However, with that dramatic shift of identity must come a greater sense of industry-wide responsibility, manifested by a stronger commitment to recognizing the special requirements and challenges manufacturers face, and working together to meet these requirements and challenges.

One place to start is for companies in the chewing gum industry that operate, or plan to operate, in the functional food industry to join associations including the European Association of the Chewing Gum Industry (EACGI) and the North American Chewing Gum Manufacturers (NACGM). These associations are working to raise the image of the industry in all aspects, including manufacturing guidelines and self regulation.

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Controlled Delivery Technology

Controlled delivery technologies are generally designed to deliver measurable amounts of an ingredient to the body at a prescribed rate, for up to 24 hours, ideally allowing for a convenient once-daily dose. Delivery technologies can also improve the efficacy of a product by helping to maintain targeted and constant levels of ingredient in the system (bio-availability).

Ideally suited for BCS (Biopharmaceutical Classification System) Class 1 actives that are considered highly soluble & permeable, controlled delivery helps limit the amounts of the active that may be lost in waste (a sometimes severe problem when common immediate release forms are ingested). Waste occurs when the active ingredient is released at a rate that is more than the body can uptake. When an immediate release product is taken, a highly soluble ingredient (i.e., vitamin C, niacin, glucosamine, etc.) may have a burst or spike effect and exceed the body's ability to absorb all of the given ingredient, in some cases causing unwanted side-effects. As the dosing period lapses, too little of the ingredient may remain, falling below the minimum level thought necessary to maintain efficacy. An effective controlled delivery product is designed to release the ideal amount of the ingredient to maintain a steady rate in the body, and allow for near 100 percent absorption.

Another important benefit of controlled delivery is an increase in patient compliance. In the pharmaceutical industry, it is accepted that requiring multiple daily doses results in up to 30 percent non-compliance. By providing a once-daily dosage to replace twice or thrice daily dosages, it is likely that far fewer dosages will be missed. The consumer benefits from simplified dosing and improved product bioavailability and, of course, the brand and retailer benefit from a greater consistency and frequency of repeat purchases.

Controlled delivery for nutraceuticals must perform similarly to pharmaceutical controlled delivery but, in order to be viable in the nutraceutical industry, must do so at a significantly lower price point. To date, this price point has been a barrier that precluded all but the simplest and, arguably, least effective types of methods, such as enteric coatings and wax matrices. However, increasingly manufacturers can find proven, patented controlled delivery technologies and products at suitable costs, offering them ability to offer controlled delivery nutraceuticals that are truly better for the brand, better for the retailer and better for the consumer. □

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