

HYBRID SOFT DRINKS WITH ADDED VALUE

Soft drinks – new beverage concepts

From the calorie bomb to the thirst quencher, fortified products that offer nutritional-physiological health benefits have become a familiar sight in the food and dairy sector. Yet, added-value soft drinks are seldom seen on the shelves. A natural bean fiber might change that.

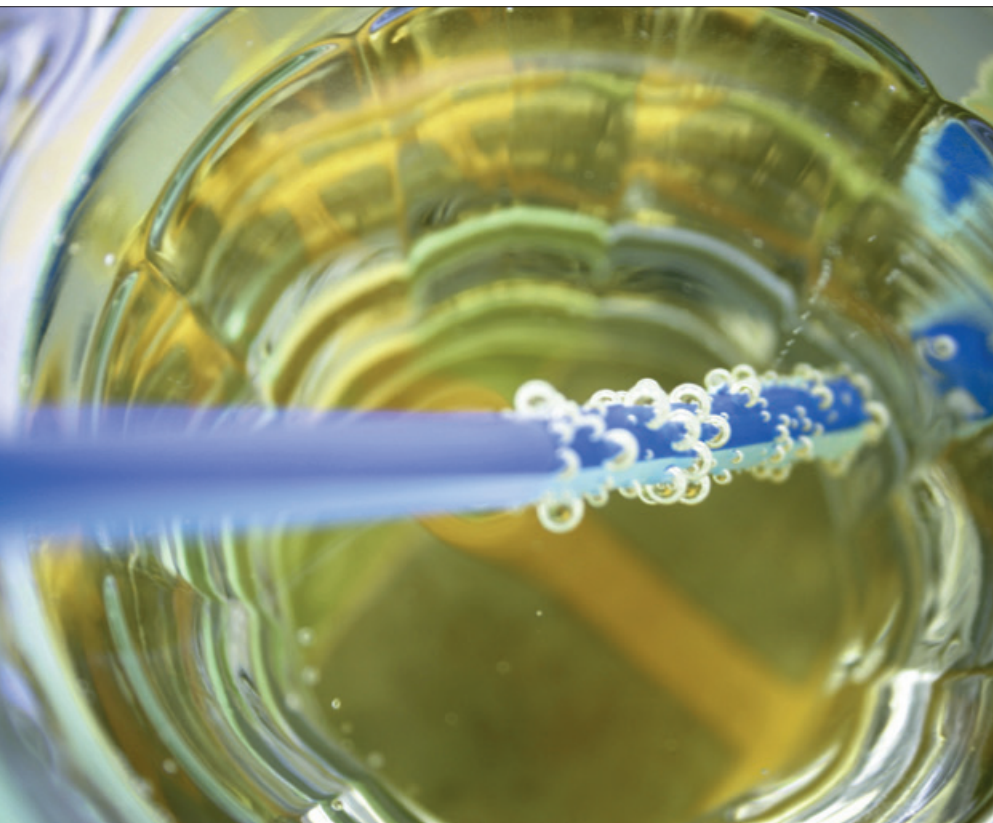
Despite all the warnings, consumer desire for carbonated soft drinks remains steady: the global turnover in this market segment will amount to approximately € 572,679 million in 2020.¹⁾ At the same time, annual sales are expected to grow at a rate of 8.9 percent until 2023. Unsurprisingly, globally recognized brands dominate the field. But, consumer tastes are not uniform and both regional and local

preferences play a key role. Furthermore, the soft drinks industry is highly innovative; 40 percent of the products on sale today were introduced in the past five years.²⁾ Many of these claim a reduced sugar and/or calorie content to comply with various national regulations, to polish up the image of fizzy pop, which is considered to be unhealthy, and to secure market share. However, the taste of well-

known recipes can only be modified to a certain degree to ensure that consumer acceptance is not gambled away. It is therefore worth taking a look at new developments and trend beverages that do not have to meet established taste expectations and could fill rewarding niches.

Nutritional value of fiber enrichment

One of the most exciting trends at present is fiber enrichment. Owing to modern eating habits and western taste preferences, the average consumption of dietary fiber is below recommended levels. With dietary fiber fortification, however, the food industry is responding to the needs of consumers who are interested in nutrition and who want to meet their daily requirements in a less complicated way. Scientists have long been investigating the connections between eating habits and the so-called diseases of civilization. A 2019 meta-study led by Dr. Andrew Reynolds from the University of Dunedin in New Zealand has underpinned this context.³⁾ According to the researchers, anyone who consumes more fiber has a lower risk of contracting one of these conditions. A total of 185 publications on prospective observational studies and the results of 58 randomized clinical trials on 4600 subjects were evaluated. Only studies were considered whose participants were healthy at the start and did not suffer from a chronic disease. The cardiovascular mortality



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Figure 1: Water-soluble dietary fiber from partially hydrolyzed guar gum (PHGG) provides with a wide range of uses in clinical nutrition. (Image: Shutterstock/Vinod K Pillai)

rate as well as the incidence of coronary heart disease, stroke, type 2 diabetes and rectal tumors decreased by 15 to 30 percent in participants with the highest fiber consumption compared with the lowest. According to the study, 25 to 29 g of dietary fiber per day is sufficient to address the risk message. Using dose-response curves, the researchers also observed a higher level of protection against breast cancer in addition to the above-mentioned diseases. The consumption of wholemeal products led to similar results.

Which fiber to choose

The choice of dietary fiber depends on the application. Is it about intestinal sluggishness, should a temporary symptom be solved by stimulation or is a healthier lifestyle the primary objective? Depending on the goal, a distinction between water-soluble and water-insoluble dietary fiber must be made. Water-insoluble, high-polymeric food components such as cellulose or lignin are used because of their swelling properties. They have no nutritional value per se; yet, these fibers bind water, swell in the large intestine and stimulate digestion by increasing the pressure on the intestinal walls. This promotes intestinal peristalsis and counteracts constipation.

In contrast, water-soluble dietary fibers can be an important food source for the intestinal flora because they nourish the “good” bacteria and encourage them to multiply, which is important for microbial balance. Enzymes ferment dietary fibers in the large intestine into short-chain fatty acids, which

support the health of the intestinal mucosa. In this way, the intestinal wall can better fend off the attacks of various toxins and pathogens while supporting the human immune system.

Natural and powerful: guar bean fiber

Gum fibers are widely used as additives in food, pharmaceuticals, personal care products and the cosmetics industry, as well as in the textile and paper, mining and construction, oil and gas sectors. In 2019, the global gum fiber mar-

ket exceeded US\$ 1.3 billion and is estimated to grow at a CAGR of more than 9 percent between 2020 and 2026.⁴⁾ Analysts also expect that the use of gum fibers for the efficient stabilization and texturizing of food and beverage products will continue to grow.

Taiyo, an ingredients supplier with Japanese roots that specializes in natural ingredients, has been developing recipes based on natural guar bean fiber. Derived from the Indian guar bean, *Cyamopsis tetragonolobus*, it is water-soluble and pure (Figure 1). According to the International Organization for Standardization technical speci-



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Figure 2 and 3: Soft drinks containing a natural fiber source increase feelings of satiety and reduce the energy intake of the next meal by 70 to 100 calories. (Image: Taiyo and Sinalco)

cation, ISO 19657:2017, Taiyo's Sunfiber® dietary fiber is a certified 100 percent natural ingredient. This means that manufacturers can simplify the certification process for their own products and make a "natural dietary fiber" claim on their product labels. The ingredient acts as a prebiotic within the gastrointestinal tract, thanks to Bifidobacteria and Lactobacilli, which are indispensable for an efficient and healthy gut flora. It also slows down and reduces the absorption of fat, cholesterol and sugar, and increases the growth of Akkermansia muciniphila, a bacterium associated with weight loss.⁵⁾

Functional effects backed by science

Backed by clinically studies, it is proven to lower the glycemic index and contribute to stabilized blood glucose levels. A health claim, approved by the Canadian health authorities, allows manufacturers to state that Sunfiber® lowers post-meal blood glucose levels by 20 percent.⁶⁾ The product also offers a number of clinically substantiated health benefits for the entire body. For example, it improves the absorption of minerals such as calcium and magnesium. Moreover, it helps to balance out a low FODMAP diet because its fermentation rate is very slow, which means that it doesn't induce pain-

ful gas, cramping or discomfort. Hence, people with irritable bowel syndrome (IBS), who often have a fiber gap as a result of not being able to eating a wide variety of foods, can benefit from this. FODMAP components – fermentable oligo-, di-, monosaccharides and polyols – are fermented by gut flora, which can cause gastrointestinal complaints such as bloating, gas, diarrhea, constipation and cramping in sensitive patients. In a clinical study published in 2010, the positive effect of a low FODMAP diet on the symptoms of conditions such as IBS was reported.⁷⁾

Cola lovers in focus

Fiber has already proven its suitability for soft drink formulations. At the "Innovation in Non-Alcoholic Beverages Congress" event in London, UK in September 2019, Taiyo presented a sugar-free cola drink concept enriched with Sunfiber® (Figure 2). The product, commercially available at new drinks.com, was jointly developed with soft drink giant Sinalco and Sweethouse, who contributed an innovative sweetening ingredient, Qorus® Dolce. The cola closely mimics the taste and mouthfeel of the sugar-sweetened original by displaying a natural, sugar-like profile with no aftertaste. The special feature of the soft drink concept is that it's not only calorie-free, but – thanks to the tasteless, odorless fiber – also satiating.

The development partners had already evaluated this benefit with a jointly developed sugar-free lemonade concept that they had presented a year earlier (Sunfiber® Orange, Figure 3). In a crossover study with 32 healthy volunteers who were divided into three groups, participants were asked to consume two drinks per day between breakfast and lunch for two weeks with a washout period between phases. Results showed that the group drinking beverages containing partially hydrolyzed guar gum (Sunfiber®) had significantly increased feelings of satiety and reduced the energy intake of the next meal by 70 to 100 calories. A 330 ml bottle contains 3 g of dietary fiber, providing 10 percent of the recommended daily intake for an adult.⁸⁾

Fuel for the little folks

A brand-new label that has already attracted the attention of retailers and the hospitality industry is the Dutch start-up Sisst&Soda. The company offers a hybrid drink containing Sunfiber® that's specifically aimed at school children between 6 and 12 years of age. Sisst&Soda was founded in 2020 by Judith van Uden, a nutrition coach who specializes in nutrition, health and well-being, and Marleen Vissers, a child and adolescent psychologist. The two are sisters and mothers and were irritated by the fact that many child-focused foods contributed nothing in terms of "building materials" or nutrients for children. Marleen Vissers explains: "Sisst&Soda was created because we want children to get the right nutrients, we want parents to be aware of the power of food and that food makes a great contribution to healthy development, both physically and cognitively. Our mission is to fuel the little folks."

Together with Taiyo's Dutch partner, Lithos Ingredients, a reputable distributor of high-quality active ingredients, the "sissters" developed beverage concepts based on natural ingredients without using synthetic colors, odors or flavorings. Judith van Uden states: "We wanted Mother Nature to be our guide. Without synthetic additives, kids get the nutrients they need in their busy lives. Sisst&Soda is full of fiber and bursting with natural energy because of Sunfiber® and minerals such as magnesium.



Figure 4: The kids drink Sisst & Soda Purple Rain contains Sunfiber®, magnesium, selenium, boron, copper, sodium and seven more minerals. (Image: Sisst & Soda)

It's tasty and fun, but also nourishes children. Overall, we aim to reduce obesity, diabetes and the other diseases associated with unhealthy eating and drinking patterns." The 200 ml bottle soda drinks, such as "Purple Rain" with the taste of dark berries (Figure 4) and "Red Rebel" with the natural aroma of red fruits, are 100 percent natural and contain carbonation for a refreshing buzz.

Better ingredients, better image

There's a lot of activity in the soft drinks market. The demand for health ingredients, which has increased again this year owing to the coronavirus crisis, is also affecting the beverage industry. Hybrid drinks – products with an additional nutritional benefit – have also found their way into this market. It's time to review the prevailing image, take note of new ideas and incorporate healthier ingredients. The enrichment of soft drinks with dietary fibers, for example, can help with both healthier consumption and weight management. This is not only interesting for the adult consumer target group, but also for adolescents, who often stray from the path of healthy eating habits by consuming too much fast food and too many high-calorie soft drinks. □

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