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WEIGHT MAINTENANCE STRATEGIES

**In the weight-management category,
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overall wellness—not a magic pill.**

By Angela Sabarese

Most of us have come to the realization that we would like to lose a few pounds at some point in our lives. Whether for self-esteem, health reasons or the desire to maintain a healthier lifestyle, keeping weight in check is important to many Americans. This is especially true since throughout the past several decades, the diet and activity level of the country's citizens has become less than ideal. Being constantly surrounded by marketing for processed food and sugary drinks, it's no wonder why gaining weight is so easy and losing it can be such a challenge; however, a significant portion of Americans are fully aware of the dangers these foods and drinks can pose for both their waistline and overall health.

According to the Centers for Disease Control and Prevention (CDC), "Almost 40 [percent] of adults in the [U.S.] had obesity in 2015-2016." The same study reported that "In 2013-2016, 49.1 [percent] of U.S. adults tried to lose weight in

the last 12 months."

Since then, however, the pandemic has caused even more people to gain weight due to stress, staying indoors, lack of physical activity, isolation from friends and family, and mental health problems. The CDC later reported that, during the period between 2018-2020, "In a longitudinal cohort of 432,302 persons aged 2-19 years with outpatient visits, the monthly rate of increase in BMI (body mass index) nearly doubled during the COVID-19 pandemic compared with a prepandemic period."

Obesity and being overweight are endemic problems that can cause serious health issues, which is why managing weight is crucial. The CDC reports that people who have overweight (defined as a BMI of 25 or higher) or obesity, compared to those with healthy weight, are at an increased risk of all causes of death (mortality); high blood pressure (hypertension); high LDL cholesterol, low HDL cholesterol or high levels of triglycerides; type 2 diabetes; coronary heart disease;

stroke; gallbladder disease; osteoarthritis; sleep apnea or breathing problems; many types of cancer; low quality of life; mental illness such as clinical depression, anxiety and other mental disorders; and body pain and difficulty with physical functioning.

Furthermore, according to David Pihlcrantz, MPH, technical director, GCI Nutrients (Burlingame, CA), "Metabolic syndrome is a cluster of conditions that occur together, increasing your risk of heart disease, stroke and type 2 diabetes. These conditions include increased blood pressure, high blood sugar, obesity (and especially excess body fat around the waist) and abnormal cholesterol or triglyceride levels. A RAND study reveals that deaths due to excess body fat and obesity have now overtaken smoking-related deaths in people older than 45."

Despite these alarming statistics, becoming healthier and losing weight and maintaining it are possible—especially with a healthy diet, enough physical activity and ingredient innovation from

the natural products industry. As the weight management category transforms into one focusing on overall health and wellness, ingredient manufacturers are responding with a wide range of solutions.

Industry Trends/Consumer Demand for Multifaceted Weight Management Solutions

The demand for weight management supplements has been on the rise, according to Jim Roza, chief scientific officer of Layn Natural Ingredients (Irvine, CA). He noted, "According to a global 2021 Innova Market Insights consumer survey, weight-management claims are strong in both the supplement and food and beverage categories, with weight-management supplements seeing 46 percent growth from 2017 to 2021." Furthermore, "Research and Markets analysts forecast the global market for weight-loss products and services to grow from \$255 billion in 2021 to \$377 billion by 2026."

Likewise, Dr. Liki Von Oppen-Bezalel, business development director, TriNutra (Israel), added, "According to estimates from the *Nutrition Business Journal* (NBJ), the active lifestyle and weight management categories had a comeback from 2020 to 2021. In 2020, the combined growth was 4.3 percent and in 2021, it grew to 20.6 percent. The report also mentioned the momentous growth of sports hydration and energy drinks—taking an estimated \$8.45 billion chunk of the \$9 billion increase from 2020 to 2021."



Vaughn DuBow, global director of marketing, Microbiome Solutions, ADM Protexin (United Kingdom), noted, "More and more, people are connecting their weight to how they feel and how they function ... With that, consumers are moving toward a weight-wellness approach, which encourages adoption of positive nutrition and exercise habits that inform a new lifestyle, rather than focusing on counting calories or numbers on the scale." Furthermore, he added, "the gut microbiome is continuing to



gain recognition as a foundation of wellness. In fact, our research shows that 58 percent of global consumers perceive a connection between the function of the bacteria in the gut to wider aspects of well-being."¹

Niki Kennedy, director of insights, Glanbia Nutritionals (Chicago, IL), had a similar opinion to that of DuBow. "We've found that the category of 'weight management' is fading and it's more about supporting a healthy lifestyle and body composition goals," she said. "As the focus moves from simply weight loss



and weight management, it becomes more about providing the benefits that support your individual lifestyle, whether that be recovery from workout, energy or hydration. Many consumers still need and want to lose weight, but that is only one aspect of an overall approach to a healthier lifestyle and making long term diet and exercise adjustments."

Annie Eng, CEO, HP Ingredients (Bradenton, FL), noted, "It is refreshing to see that consumers are beginning to distrust 'magic pill' weight-loss supplements promising that pounds will disappear, and you don't have to stop eating junk or start exercising. Instead, consumers who are serious about losing weight and improving health are looking for supplements to help them achieve long-term wellness and for weight support supplements to help them more effectively and quickly reach their desired weight range."

Zachary Sniderman, director of business development, North America, Optibiotix Health Plc (United Kingdom), added, "There is now a marked movement toward personalized nutrition, especially by microbiologists. For example, newly discovered techniques that can



more accurately analyze an individual's gastrointestinal tract to understand how changes in diet can alter the different levels of bacteria found in our gut are currently being tested. Microbiologists at the University of Missouri in Columbia, in association with the Swiss Federal Institute of Technology, have developed a non-invasive chemical probe that—when ingested—can measure the activity of bile salt hydrolase activity along the entire length of the gut.² While only in its infancy, this technique could be a positive game-changer for microbiologists in the future."

Echoing DuBow, Kennedy and Eng, Von Oppen-Bezalel stated, "Many consumers are more focused on a holistic approach to health that fits within the lifestyle that they choose. When it comes to weight management, marketing a supplement or ingredient for 'weight loss' is becoming taboo, so the focus needs to be on how it builds upon current diet and exercise efforts and how particular biometrics are affected. In particular, supplements that support a healthy lipid metabolism, inflammation response and blood sugar levels not only address weight management, but also provide benefits for consumers that are proactively looking to support both short- and long-term wellness and healthy lifestyle goals."

In response to these trends, natural ingredient manufacturers are responding with new innovations to meet consumers where they want to be.

Natural Ingredients for Weight Management and Long-term Wellness

"Consumers are ... becoming more aware of the association of healthy weight and metabolic health," said DuBow. "Microbiome-supporting solutions like probiotics are now available that target aspects of body composition in addition to gut health and other aspects of wellbeing."³ As a result, in addition to probiotics, ADM Protexin offers postbiotics, which "can retain stability across



processing methods, and they can be incorporated into a wide range of products,* giving manufacturers and consumers greater optionality; from 3D printed gummies to drops to bars, postbiotics are spurring innovation in personalized and active nutrition." ADM Protexin has recently acquired Deerland Probiotics & Enzymes, which has brought additional new solutions like spore-forming probiotics for enhanced stability across applications.

ADM Protexin's "award-winning BPL1 (*Bifidobacterium animalis* subsp. *lactis* CECT 8145) probiotic targets factors relevant to metabolic health,⁴ and with its heat-treated postbiotic counterpart, we help health and wellness brands provide attributes to meet consumer demand." The company also leverages "spore-forming probiotics, such as DE111 (*Bacillus subtilis*).** DE111 can withstand formulation environments that would otherwise damage conventional lactic acid bacteria-based probiotics. With their unique formulation benefits, these strains make it easier for formulators to incorporate microbiome-supporting solutions into beverages, gummies, baked goods and other applications.**"

Aside from biotics, ADM Protexin also offers fiber ingredients which can also help with digestion and weight management. "ADM/Matsutani LLC have created Fibersol,** a line of soluble dietary fiber ingredients supported by over 30 years of extensive clinical research," explained DuBow. "Studies suggest Fibersol helps reduce blood sugar spikes after a meal in individuals with normal blood sugar levels,^{5,6} and it promotes the growth of gut microbes.^{7,8} Fibersol can be used in numerous food or beverage applications without affecting taste or texture and requiring minimal formulation and process adjustments." The company also offers a portfolio of botanical ingredients derived from natural sources that can support important aspects of wellness, including weight management goals.

Glanbia Nutritionals, according to Kennedy, specializes in protein for the weight management category. "While bulk protein powders are still very relevant, we are able to utilize membrane technology to isolate protein factors, like lactoferrin,

which while present in dairy protein in smaller amounts, once concentrated, can provide immune support," she shared. Some of the company's weight-management ingredients include Prolibra and Salibra, which "were among our first protein technology innovations and continue to be relevant today as weight management transforms into healthy lifestyle and personalized diets." Glanbia Nutritionals has also expanded its dairy operations to include "custom nutrient premixes and functionally optimized nutrient technologies to complement our solutions portfolio."

Eng noted that "One significant culprit of weight gain is the imbalance of appetite/satiety hormones—ghrelin (the appetite or give me food hormone) and leptin (the satiety or leave it on the plate hormone). Consumers are just starting to learn about these hormones and how they affect weight gain and loss, which shows a great opportunity for innovative weight-management supplements."



One of HP Ingredients' offerings, CitruSlim, "is a proprietary blend of a full-spectrum Italian citrus bergamot polyphenolic extract (Bergamonte) and a potent Malaysian *Eurycoma longifolia* extract (Adapticort). This innovative nutritional supplement is formulated to support healthy metabolic function, which results in accelerated fat and weight loss," explained Eng.

Eng continued, "CitruSlim helps support weight loss through modulating appetite hormones ghrelin and leptin. Ghrelin is produced in the gut, and it sends a signal to the brain to increase appetite when the stomach is empty. Too much causes excess consumption of food, thus, calories and fat storage are increased. Leptin is produced by fat cells. It inhibits hunger and regulates energy balance. When the body is functioning properly, excess fat cells produce leptin that signals the brain to reduce the appetite, allowing the body to dip into the fat stores to feed itself."

Thom King, CEO, Icon Foods (Portland, OR) stated that the company supplies natural sweeteners to the sports nutrition industry as well as manufacturers who target keto, low carb and paleo consumers. "Our main ingredients have been stevia and erythritol with allulose and monk fruit. But, in recent months we



have added thaumatin, which is gaining in popularity," explained King. In addition, the company has been successful with their allulose, which "functions similarly to sugar but doesn't affect blood sugar levels. It can even drop blood sugar and raise ketone levels," making it a sweetener that can aid in weight loss, according to King.

"Icon Foods is continually innovating new sweeteners and products that our manufacturers can use in their products that help consumers reduce added sugars," King shared. "Some of these innovations are an M&M-type coated chocolate that has no added sugar. This, coupled with our chocolate chips in both dark/white chocolate and festive sprinkles, give manufacturers a cornucopia of clean label no-added-sugar ingredients to work with."



According to Roza, "The primary candidates for which there is scientific evidence to support weight loss claims are green tea (EGCG), green coffee bean (50 percent chlorogenic acid), seaweed extract (fucoxanthin) and natural caffeine." In addition to these, Layne Natural Ingredients recently introduced its Botanical Ingredient Library, "a free online botanical library and search tool that enables manufacturers and brands to explore key botanical extract ingredients and solutions and easily map them to targeted applications and functions." Some of the botanicals in the Layn portfolio, according to Roza, include andrographis; cinnamon; dandelion; eucommia leaf; green coffee bean; green tea; Pu-erh tea; schisandra; and seaweed.

Roza further explained, "Supplements that inhibit lipogenesis or support lipolysis can be helpful in reducing fat stores when used in conjunction with aerobic exercise and a calorie restricted diet. Similarly, supplements that inhibit carbohydrate absorption can also be effective with exercise and dieting." The main point, however, is that "supplements are



meant to supplement the diet and not take the place of good nutrition or exercise. I would be weary of any supplement that is promoted as such. Supporting or nurturing natural processes within the body that regulate satiety, or fat and carbohydrate utilization tend to be the most useful," Roza said.

Interestingly, Roza pointed to research indicating that "Weight management through epigenetics may provide benefits not seen with other approaches to maintaining a healthy body weight. Epigenetics is the study of how behaviors such as diet and exercise along with the environment can affect the way your genes work. Research is beginning to show how epigenetic mechanisms are associated with weight gain." He elaborated, "Methylfolate, methylcobalamin, choline and methionine are some of the nutrients that will promote DNA methylation along with eating plenty of greens, reducing alcohol consumption and eating fermented foods."

Sniderman offered information on Optibiotix's most successful weight management ingredient, SlimBiome, which was developed by using a high throughput technology platform that screens microbiome modulators. The company's most recent study for SlimBiome, conducted by the University of Roehampton in 2020, investigated the effect of the fiber and mineral formulation on satiety and satiation, when taken as part of a calorie restricted diet in overweight and obese women. The results showed that taking Slimbiome "led to significantly reduced body weight (average 4.2 pounds), BMI, body fat percentage, waist and hip circumference, and systolic blood pressure." Furthermore, the results showed "a reduction in sweet cravings, a statistically significant reduction in savory cravings, a substantial improvement in mood and a positive impact on gut microbiome composition."

Optibiotix recently launched LeanBiome, "a blend of dietary and prebiotic fibers and a trace mineral that supports sports enthusiasts that facilitates lean muscle mass and bolsters fiber intake." Furthermore, "by regulating macronutrient metabolism and supporting the diversity of the microbiome, LeanBiome

improves gut health through dietary and prebiotic fibers, particularly targeting the sweet cravings that can detrimentally impact a sports enthusiast's ability to stay lean." Both ingredients, according to Sniderman, have no distinguishable taste, making them ideal for a wide range of products.

Dr. Kalyanam Nagabhushanam, president (R&D), Sabinsa Corporation, (East Windsor, NJ), offered information about the company's weight management ingredient portfolio. "Citrin, based on *Garcinia cambogia*, was one of the



early branded ingredients introduced by Sabinsa in the early 1990s," he said. "As a result of the ingredients' success, the company launched Citrin K, "a highly soluble version suitable for aqueous formulations accommodating other ingredients useful for everyone including sports nutrition consumers."

Another ingredient offered by the company is ForsLean, which "increases cAMP accumulation and stimulates lipolysis leading to decrease in fat storage with a beneficial impact on weight. ForsLean was also shown to mediate white fat to beige or brown fat conversion; These qualities added to the versatility of ForsLean to increase lean body mass." Sabinsa's ingredient Fabenol "is known to work by blocking alpha-amylase, helping to maintain healthy glycemic index. Sometimes obesity is interlinked with gut dysbiosis wherein the unwanted bacterial population dominate, sustaining and sometimes worsening the effects of obesity."

The company's most recent introduction is CurCousin, which "with its active Calebin-A possessing a close resemblance of curcumin, was supported in its role for weight reduction in a clinical trial wherein an increase of good cholesterol levels was accompanied with leptin sensitivity, marking the product special in the category." A second CurCousin trial, according to Nagabhushanam, is nearing completion and the results will

be published soon.

"Another promising product, waiting in the wings, is Cirpusins, whose clinical effects on controlling obesity were recently published along with a galaxy of data from preclinical investigations. A second clinical is just completed with promising results. Cirpusin is characterized to contain piceatannol, scirpusin A and scirpusin B, all close structures of resveratrol," added Nagabhushanam.

Sabinsa's weight management products, according to, Nagabhushanam, "always usher in a plurality of benefits. It is not simply reducing weight of an individual but addressing some of the underlying functional corrections that need to be cared for. The issue could be an imbalance in hormones like leptin/adiponectin (addressed by CurCousin) or the lipid values (addressed by Cirpusin) or gut dysbiosis (CurCousin and Garcitrin). Multipronged mechanisms of action of a weight-loss ingredient will reinforce its success and secure a lasting position in the marketplace."

Pihlcrantz also mentioned *Garcinia cambogia* extract, which became popular after being featured on "The Dr. Oz Show" in 2012. "Animal studies show that it can hinder a fat-producing enzyme in the body and increase serotonin levels, potentially helping to reduce cravings." Another popular weight management ingredient is green coffee bean extract, Pihlcrantz said, which is made from coffee beans that have not been roasted. The two ingredients that are believed to help with weight loss are caffeine and chlorogenic acid. "Caffeine can increase fat burning and chlorogenic acid can slow the breakdown of carbohydrates in the gut," he said. Likewise, green tea extract is also a popular ingredient, as it contains the antioxidant epigallocatechin gallate (EGCG), which may aid in fat burning. "Green tea extract is believed to hinder enzymes such as pancreatic lipase, which, when combined with reduced fat absorption, can be an effective way to treat obesity," explained Pihlcrantz.

Raspberry ketones are another ingredient that can help aid weight loss, Pihlcrantz said. In isolated fat cells from mice, raspberry ketones increase the breakdown of fat and increase levels of a hormone called adiponectin, which is believed to be related to weight loss." In addition, conjugated linoleic acid (CLA) "is known as one of the 'healthier' trans fats and is found naturally in some fatty animal-derived foods like cheese and butter. CLA may reduce appetite, boost



metabolism and stimulate the breakdown of body fat.”

Pihlcrantz also offered information on chromium picolinate, a trace mineral that may also aid in weight loss. Low chromium may cause insulin resistance and hurt your ability to convert food into energy properly. However, when you consume a safe amount of chromium in weight-loss pills, the mineral can help regulate blood sugar and increase muscle mass,” he explained. “Chromium enhances insulin function and helps convert carbohydrates, proteins and fats into energy. Proponents of the mineral also believe that chromium in weight loss pills can help suppress your appetite, improve your fat-burning process and reduce body fat.”



According to Von Oppen-Bezalel, TriNutra’s ingredient ThymoQuin “has demonstrated beneficial effects on metabolic function and fatty liver, specifically its ability to positively impact blood sugar, cholesterol and blood pressure.” She added, “In a study conducted by TriNutra



on obese mice using its 3 percent ThymoQuin, the researchers found that ThymoQuin supplementation regulated mitochondrial function, lowered fasting blood glucose and blood pressure and increased

oxygen consumption in obese mice.”

Aside from testing ThymoQuin as a standalone ingredient, the company also conducts studies on how ThymoQuin can work synergistically with other ingredients, such as omega-3s, astaxanthin and vitamin D. “We have discovered that ThymoQuin increases the functional properties of the ingredients, providing a truly synergistic effect and overall better-quality product,” Von Oppen-Bezalel concluded.

Advice for Manufacturers

Eng advised manufacturers to “keep in mind that people no longer just want to lose weight—they want to keep it off and be healthy ... Formulating supplements that help control runaway appetite, helping to increase fat-burning and that nourish the body will help the brand marketer to stand out and enjoy cultivating loyal consumership rather than just for the short-term.”

Roza suggested asking the following questions: “Is the ingredient supported by human clinical research. Is there more than just one study? Population, age group, gender? The quality of the results. Were they statistically significant? Amount used, route of administration, any contraindications, or adverse effects? Stability, bioavailability?” He added, “Today, consumers are seeking holistic solutions, and recognize the links between healthy weight and other health and wellness issues. Additionally, consumers are more loyal to brands that demonstrate commitment to sustainability and clean-label and align with brands with compelling origin and mission stories. Tout the unique ways you ‘walk the walk’ in these areas and more customers are likely to gravitate to your brand—and then stick with it.”

Sniderman added, “For weight management, manufacturers should consider natural prebiotic and dietary fibers as they help to stimulate the growth of health positive bacteria (such as fructooligosaccharides) or that promote satiety (such as glucomannan) to best support sustainable weight management as an added functional benefit. They should think about the application format and whether the product is targeted for on-the-go snacking or if it’s best suited to complement a healthy balanced meal. They need to keep in mind the consumer demand for a product that doesn’t just satisfy their appetite, but one that boosts their mood too.”

Sniderman also noted, “The trend to-

ward healthy snacking has created plenty of opportunities for manufacturers to reformulate products to suit. By choosing ingredients that offer functional benefits, brands are now focusing on using natural ingredients in their products, which are not only good for consumer health but are also great for the planet, too. Raw ingredients like cacao, chicory root, ginger, seaweed, lentils and legumes, all which offer great gut health benefits, are just some of the ingredients that are being used as part of this drive for innovation.”

Nagabhushanam stated, “It is important that brands use ingredients that are backed by science supported by clinical trials, and in the amounts the research studied. They should ensure that the products are proven safe. The quality of the ingredient is of utmost importance. Today’s consumers also care about transparency and sustainability, so companies should tell those details along with the research consumers seek. They want to know a product will work, and that the company is ethical.” **NIE**

*Local regulations must be reviewed to confirm permissibility of ingredients for each food category.

**DE111 is a trademark registered for Deerland Probiotics & Enzymes, Inc. in the US and other countries.

***Fibersol is a trademark registered for ADM/Matsutani LLC in the US.

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