

# Prepared Foods

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## Ingredients for Functional Foods & Beverages

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## COVER STORY

## Ingredients for Functional Foods, Beverages

Food and beverage companies are formulating new products to address health issues—everything from bone and joint health to weight management. *Prepared Foods* presents ingredients that address as many as 11 different health conditions.



PHOTO CREDIT: COVER PHOTO BY T.J. HINE PHOTOGRAPHY

## INGREDIENT CHALLENGES

## 11 Annual Weight Management Ingredient Survey

*Prepared Foods'* annual R&D report and survey about weight management trends and ingredient formulation strategies.

## NUTRASOLUTIONS

## 36 Ingredients for Health Reference

*Prepared Foods'* 2015 annual ingredients for health reference showcases commercially available ingredients as they apply to nearly a dozen health conditions. Categories range from antioxidants to ingredients for weight management. This special feature provides information on the role of ingredient for these conditions and includes consumer market and clinical research data.

## 37 Antioxidants for Health

Trending popular ingredients include apple polyphenols, blueberries, chia seeds, co-enzyme Q10, coffee berry fruit, green tea, pomegranate and vitamin E.

## 40 Bone and Joint Health

Trending popular ingredients include apple extract, olive extract, vitamin K2, collagen and collagen peptides and glucosamine.

## 43 Cardiovascular Health

Trending popular ingredients include omega-3 fatty acids, phytosterols, cocoa extract, olive extract and salt reduction technologies.

## 46 Cognitive Health

Functional ingredients here include vitamin B6 and B12, taurine, choline, magnesium, L-theanine, and, of course, EPA and DHA.

## 48 Diabetic Benefits

Trending popular ingredients include fibers and natural sweetening solutions from sugar beets, molasses, corn and other sources.

## 50 Digestive Health

Trending popular ingredient options include various probiotics and prebiotic dietary fibers.

## 54 Energy / Sports Performance

Trending new ingredients include ribose, L-carnitine, vitamin B, and proteins (from various sources), chia, and extracts from apples, grapes and even kola nuts.

## 59 Eye Health

Key ingredients here include vitamins A and E, zinc, whey protein, beta-carotene and lutein.

## 60 Immunity Enhancement

Trending popular ingredients include a range of probiotic strains and blends, vitamins, particularly the so-called ACE vitamins, and zinc.

## 62 Weight Management

Trending popular ingredients include sweeteners, fiber, conjugated linoleic acids as well as everything from almonds to extracts of peppers and coffee beans.

## 66 General Health

This section contains a range of offerings that target various conditions. Included are premixes and fortification ingredients as well as ingredients for improved skin, sleep, bladder, urinary tract and prostate functions. More ingredients address such issues as functional flavor masking.

## R+D APPLICATIONS

75 R&D Application:  
DuPont Knowledge Award

a typical 85% total dietary fiber level, makes it easy to fortify snacks and foods and deliver great flavor and texture. GPC showcased TruBran in Cherry Pistachio Granola Bars and Yogurt-Coated Protein Snack Bites.—*Grain Processing Corporation*, [www.grainprocessing.com](http://www.grainprocessing.com)

### Natural Solution

Sunfiber is an all natural, galactomannan-based soluble fiber made from hydrolyzed guar gum. Tasteless, colorless and odorless, Sunfiber has no visible effect on product but it significantly boosts health benefits and improves food and beverage functionality. It delivers high soluble fiber content with low caloric contribution (1.9kcal/gram) and exhibits excellent stability. Sunfiber is true regulating fiber that not only helps with constipation, but uniquely helps with diarrhea as well—returning stool content to a normal, healthy state without the typical bloating, cramping and gas production of other fibers. Sunfiber is 100% gluten free, GRAS (self affirmation), non-GMO, certified kosher and halal.—*Taiyo International Inc.*, [www.sunfiber.com](http://www.sunfiber.com)

### Fiber Focus

SunOpta transforms a variety of natural and sustainable grain and plant-based raw materials into value-added food ingredient solutions. We specialize in the technical processing of food ingredients with a focus on non-GMO, natural, functional and organic offerings. SunOpta offers a family of insoluble fibers including Canadian Harvest Oat Fibers, Stabilized Brans and Wheat Germ and SunOpta Soy, Cellulose and Rice Fibers. These high quality fibers are the perfect choice for increasing a product's dietary fiber content and meet demands of health-conscious consumers. SunOpta's line of fiber products comes with a solid reputation for consistent quality and the technical expertise needed to incorporate them into all kinds of foods and beverages.—*SunOpta*, [www.sunopta.com](http://www.sunopta.com)

## Energy/Sports Performance

There has been rising interest in energy and sports performance in recent years, as it has moved out of the more specialist domain of sportsmen, athletes and bodybuilders and into the mainstream for those with generally active lifestyles. Sports and performance lines have created rising demand for protein products, particularly whey and dairy proteins, while a wide range of other ingredients are used in energy products, led by caffeine, taurine and guarana. Although sports and energy drinks have been the most high-profile face of developments in this area, there have been launches of food and drinks products with

sports/recovery and energy/alertness claims across the market, featuring on 1.6% of global launches in 2013, with soft drinks accounting for just over 41% of those. More than 70% of those soft drinks were actually sports or energy drinks, with other lines including juices/juice drinks, drink concentrates and mixes, and iced tea.

—Lu Ann Williams, Innova Market Insights,  
[helpdesk@innovami.com](mailto:helpdesk@innovami.com), [www.innovadatabase.com](http://www.innovadatabase.com)

### Omega-3 Chia

Benexia Omega-3 Chia is an organic, gluten-free, ancient, whole grain, and one of the richest sources of Omega-3 fatty acids. Seeds typically contain 20% protein, 34% oil and 25% dietary fiber. Benexia also is a super antioxidant, delivering a higher ORAC value than fresh blueberries. The health benefits include cardiovascular, brain and immune system support, as well as support of a healthy inflammatory response. Benexia Chia is the only ISO certified source for highest purity and quality. It is available in bulk seed, sprouted seed, milled seed, flour and oil. It is ideal for drink mixes, bars and incorporates easily into other foods.—*Proprietary Nutritionals Inc.*, [www.pnibrands.com](http://www.pnibrands.com)

### Sustained Energy

Clinically tested Sustamine helps athletes and supports the body's ability to rehydrate, replenish and recover. Ultra-pure, clinically tested, Sustamine is produced through a patented fermentation method to create a unique dipeptide that is more easily absorbed by the body than complex protein molecules. Sustamine has been shown to enhance electrolyte and water absorption in the intestines, stimulate glycogen synthesis, inhibit muscle protein breakdown, promote the synthesis of muscle protein, protect the integrity of the gastrointestinal tract, contribute to better nutrient absorption and stimulate the immune system.—*Kyowa Hakko USA*, [www.sustamine.com](http://www.sustamine.com), [www.kyowa-usa.com](http://www.kyowa-usa.com)

### Lactoprot Caseinates

Farbest Brands offers a range of Lactoprot caseinates, with both extruded and roller-dried versions available. These caseinates provide outstanding nutritional properties, contain all of the essential amino acids and have a protein efficiency ratio (P.E.R.) of 2.5. They are ideally formulated for RTD beverages, powdered beverages, and nutrition bars for sports nutrition. All Lactoprot caseinates have a protein content of 92.5% on a dry basis.—*Farbest Brands*, [www.farbest.com](http://www.farbest.com)

### Apple, Grape Polyphenols

ViNitrox has been developed by Nexira to specifically answer the demands of athletes in search of natural dietary supplements. ViNi-

trox is a unique and proprietary synergistic combination of apple and grape polyphenols. It offers a number of exceptional sports nutrition properties including enhanced and lasting performance. Nexira's latest clinical study\* on 50 athletes, 25 to 45 years old, demonstrated that 500 mg/day of ViNitrox improves physical capabilities: increases physical training time by 10% and delays the fatigue barrier by 13%. ViNitrox can be used in numerous forms: beverages, bars, tablets, capsules, gels, etc. (\*Double-blind, crossover, placebo controlled study).—Nexira, [www.nexira.com](http://www.nexira.com)

### Energy, Focus

Consumers demand healthier beverages and functional foods that offer real health benefits. Meet their needs with AlphaSize A-GPC. A-GPC is a widely used nutrient in mental and physical performance enhancing dietary supplements. A-GPC is natural, efficacious, and FDA no objection GRAS. AlphaSize A-GPC can help maintain and improve mental performance – including memory, learning, concentration, focus, and recall. It also can help boost exercise performance. Memory, energy, mood support, and sports performance are all categories offering tremendous opportunity. Processors can seize the opportunity in enhanced waters, sports drinks, and energy drinks.—Chemi Nutra, [www.cheminutra.com](http://www.cheminutra.com)

### Dairy Proteins

Nutegrity offers an extensive line of dairy proteins including whey protein concentrates, whey protein isolates, milk protein concentrates, milk protein isolates, and lactose. The majority of Nutegrity's dairy protein offerings are made from rBGH-free milk sourced from local farms, processed using low temperature ultrafiltration and gentle drying, and are kosher certified. These dairy proteins contain high levels of branch chain amino acids and natural enzymes, vitamins, antioxidants, and nutrients the body needs to build and maintain muscle, replenish nutrients and regulate metabolism.—Nutegrity, [www.nutegrity.com](http://www.nutegrity.com)

### Natural Energy

Bioenergy Ribose is a patent-protected, all-natural, functional ingredient. It already is popular in various of beverages and supplements and is attracting more

food manufacturers. Bioenergy Ribose is compatible with many ingredients, easily soluble, slightly sweet, and stable. It has been successfully added to a variety of bakery, dairy, cereal, confectionary and

# Oat Fiber

Also Available As **ORGANIC**

## Increase Fiber and Functionality

**FEATURES:**

- Friability Index Improvers
- High Fiber Binders/ Hydrocolloids
- Texturizers
- Source of Soluble & Insoluble Fibers
- Conventional & Organic

**APPLICATIONS:**

- Baked & Fried Goods
- RTE Cereals & Snack Foods
- Meats
- Beverages
- Pastas
- Tortillas
- Low Carb/High Fiber Products

Available in either conventional or organic form, Grain Millers provides you with your lowest cost fiber solution. Improve your yields, extend your products shelf life and/or enjoy a myriad of functional benefits when using Grain Millers' Oat Fiber.

Grain Millers' Oat Fiber is the first natural (non chemically treated or refined) oat fiber designed to provide food processors with a label-friendly ingredient. For information, technical support or to learn more about Grain Millers' family of products, please call (800) 443-8972.

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beverage products. Ribose is a 5-carbon monosaccharide that regulates the body's natural process of energy synthesis. Ribose helps muscles regenerate lost energy and potentially helps to minimize any physiological consequences of a supply versus demand energy mismatch. The safety of Bioenergy Ribose is evidenced by its GRAS status (including a "no questions letter" from the FDA). —*Bioenergy Life Science Inc.*, [www.bioenergyribose.com](http://www.bioenergyribose.com)

### Three-Stage Protein

Friesland Campina used SupplySide West to showcase a three-stage protein bar with its Excellion EM9, NutriWhey 800 F and Hyvital Whey 8022. Athletic consumers want the best dietary choices to complement workouts—but not at the expense of sensory enjoyment. Friesland developed this tasty prototype with three types of protein—each with different digestion rates. Excellion EM9 Calcium Caseinate digests slowly while Nutriwhey 800 F whey protein concentrate digests quickly. Then there's Hyvital Whey 8022 whey protein hydrolysate, which reaches the bloodstream quickly after ingestion. The result is a sustainable release of amino acids over time. —*Friesland Campina*, [www.frieslandcampina.com](http://www.frieslandcampina.com)

### New Enzyme Blend

Glanbia Nutritionals' IGNITOR Amino Release Matrix is an unparalleled enzyme blend for protein optimization. A proprietary blend of proteolytic enzymes, IGNITOR was designed and optimized to efficiently release branched chain amino acids (BCAAs) and glutamine from whey protein sources. At the same time, IGNITOR promotes heightened mTOR activation for enhanced protein synthesis and skeletal muscle growth. IGNITOR's ability to provide a more efficient release of BCAAs and glutamine allows for formulations that contain less protein to achieve desired effectiveness levels. This allows for a reduction in the serving size along with a decrease in the negative side effects known to come from excessive protein intake, such as bloating, poor digestion, gas, etc. Glanbia Nutritionals offers a premier portfolio of innovative, clinically-driven specialty sports nutrition ingredient solutions. —*Glanbia Nutritionals*, [www.glanbianutritionals.com](http://www.glanbianutritionals.com)

### Kola Nut

BI Nutraceuticals offers both Kola Nut Powder and Powder Extracts. Kola nut is a light brown to red brown powder from the nuts of the tree, *Cola nitida*, native to the rainforests of Africa and now widely cultivated in the United States. In Africa, kola nuts are traditionally chewed for their energizing effects while in western cultures, kola nut was utilized as a flavoring for old-fashioned cola beverages before artificial flavoring was utilized. Today, kola nut is more commonly used as an energy ingredient due to its stimulating effects on the central nervous system and heart. These stimulating

effects are associated with its xanthine content, specifically caffeine and theobromine. Its energizing effects are similar to guarana and yerba maté. —*BI Nutraceuticals*, [www.botanicals.com](http://www.botanicals.com)

### Healthy Proteins

Collagen is an important protein source, providing the nutrients required for the many processes that take place in muscles and cells. With PEPTIPLUS, GELITA offers pure collagen proteins that can be used in a variety of functional sport bars, beverages or protein powders. PEPTIPLUS replaces energy used in training and is beneficial for satiety. It is easily absorbed by the body so that its energy becomes readily available. Due to its excellent solubility in cold water, PEPTIPLUS is ideal for sports and protein drinks. As a pure collagenous protein with neutral odor and taste, PEPTIPLUS allows for a high protein load without affecting the sensory profile. Due to its excellent sensory and functional properties, PEPTIPLUS also can be used as an ingredient in numerous types of functional bars. —*Gelita AG*, [www.gelita.com](http://www.gelita.com)

### Marine Protein Isolate

ProGo is a natural and highly functional protein isolate made from salmon. It is extracted through a natural process so that functional and nutritional properties are preserved. It is then hydrolyzed so that it contains oligopeptides and peptides with a molecular weight of less than 3000 Daltons. Also, 50% of the peptides have a molecular weight of less than 1000 Daltons. ProGo has a favorable amino acid profile and is particularly rich in methionine, histidine and arginine. It also has been shown in animal studies to improve iron absorption. The nutritional assets of ProGo are its richness in essential amino acids, the absence of gluten, lactose and cholesterol, and its lack of anti-nutritional elements. These aspects are very beneficial when creating healthy and balanced products. ProGo also has a neutral taste and is easy to formulate in protein powders, protein bars, RTD protein drinks. —*Roxlor International LLC*, [www.roxlor.com](http://www.roxlor.com)

### Muscle Recovery

MGP Ingredients' Optein is a highly versatile, lightly hydrolyzed wheat protein. A clinical study shows Optein's effectiveness in aiding muscle recovery after exercise, which proves its superior functionality in nutritional and protein drink powder mixes, sports beverages, smoothies, and protein, energy and meal replacement bars. Among the more unique attributes of Optein is that it provides approximately double the glutamine content of soy and whey proteins. Glutamine is reported to be effective in the prevention of fatigue and over-training syndrome among active athletes, rapid recovery of critically-ill patients, and replacement of the body's glycogen. Optein has a

non-bitter flavor profile, a neutral pH level and is easily soluble in water and other liquids.  
—MGP Ingredients, [www.mgpingredients.com](http://www.mgpingredients.com)

### L-carnitine

Lonza is a leading manufacturer of L-carnitine sold under the brand name Carnipure. For recovery, daily Carnipure L-carnitine consumption prior to high-intensity exercise can reduce muscle pain/damage. Carnipure L-carnitine may improve blood flow during and following exercise. Therefore, it helps reduce the hypoxic or damaging effects creating during exercise. Lonza scientists created the proprietary, fully integrated Carnipure production process. It directly produces the L-isomer of Carnitine, the form found in nature. Carnipure tartrate and Carnipure crystalline are self-affirmed GRAS for use in conventional foods as a dietary source of L-carnitine. Both are bright white, pH and heat stable, highly water soluble and form colorless solutions. They can be used in beverages, bars, dairy and other food products.  
—Lonza Group Ltd., [www.lonza.com](http://www.lonza.com)

### Contract Processor Partner

As part of the global Agropur Dairy Cooperative, Agropur Ingredients Health & Wellness business can help processors formulate, process, package and launch performance and pre-sport protein products, smoothie mixes, sports drinks, amino acid-fortified drinks, fiber and cleanse products and other protein products (milk, whey, veggie, alternative). Agropur also has experience with ready-to-drink formulations, organic formulas, immunity products and other offerings. Agropur used SupplySide West to launch a sister site, [www.agropurHW.com](http://www.agropurHW.com), which caters to technically-minded, hands-on nutritional brand customers.—Agropur Ingredients Health & Wellness, [www.agropuringredients.com](http://www.agropuringredients.com)

### Energy Chews

Watson has formulated a B-complex blend for sports recovery applications such as soft chews or gummy vitamins. As part of a daily diet, B vitamins help break down carbohydrates into fuel that muscles can readily use. To protect the vitamins during the gummy process, for example, Watson uses a specialized coating, which can withstand production-related heat and moisture.—Watson Inc., [www.watson-inc.com](http://www.watson-inc.com)

### Tart Cherry Juice Recovery

Tart cherry juice is rapidly gaining a following among elite athletes and weekend warriors as a drink that helps speed the recovery process. Long known for its anti-inflammatory properties, which have been highly valued by sufferers of arthritis and gout, tart cherry juice is now relied on for easing muscle soreness after exercise. The pain associated with exercise involves muscle damage, inflammation and oxidative stress. Tart cherries seem to help with all three due to the concentrated amounts of anthocyanins inside. Studies have shown that Montmorency tart cherry juice may help reduce strength loss and aid recovery after extensive exercise. One recent study found that cyclists who drank Montmorency tart cherry juice before a three-day simulated race experienced less inflammation and oxidative stress compared to those who drank another beverage.  
—Cherry Marketing Institute, [www.choosecherries.com](http://www.choosecherries.com)

## Eye Health

Food and drinks products marketed on an eye health platform are still relatively few and far between, although activity has increased markedly in recent years, as an ageing population starts to be increasingly concerned over issues such as age-related macular degeneration. Global launch num-

# PhytoPin®



PhytoPin® is pine phytosterols produced from the Les Landes forest in Southwest France by a vertically integrated manufacturer providing complete traceability. PhytoPin is >99% sterol isomers and is comprised of 75% Beta-sitosterol and just under 90% Beta-sitosterol and Beta-Sitostanol. It also contains about 12% campesterol and campestanol. This leaves <3% other sterol isomers in the product. Because of this, PhytoPin is an extremely efficient source of beneficial plant sterols with a high potency for meeting approved health claims.

**Heart Health**  
**Prostate Health**  
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