

- Combinations of proteins from plant and animal sources may yield more flexibility in formulation, although target demographic and formulation considerations should be addressed prior to protein selection.
- Protein is being incorporated into a broader array of finished products; however, beverages and nutritional bars continue to serve as the primary delivery vehicles for consumers seeking added protein in their diets.
- Manufacturing processes may adversely affect certain properties of protein, making the selection of an optimal source critical early in the product development process.

## Proteins a Treat for the Body and Soul

by Pete Croatto

**P**rotein intake has been shown in research trials to afford many health benefits from weight management and muscle development to immune support and energy. In fact, Stephan de Haes, market unit manager, performance nutrition and weight management for FrieslandCampina DMV, cited several factors supporting the popularity of protein before looking at studies: "For the last 20 years, we've been told all the things you can't take. Proteins make us feel like we can treat ourselves."

Talk to the executives behind protein ingredients and the mood is universally upbeat, like the closing chorus in an old MGM musical. Many of the principles behind good health hinge on avoidance; proteins blessedly don't fit that description.

"Proteins are one of the strongest platforms for weight management," said Katherine Bond, director of business

development at Cyvex Nutrition. "This has been driven by the increasing body of high-quality scientific research, including a clinical study proving that high-protein, low-glycemic index diets are the most effective for weight loss."

Translation: the days of protein just being manna for gym rats are really, truly no more. It has emerged as the people's choice.

"We see a mega-trend toward a protein-rich diet that is low in carbohydrates and fat," said Anne Brown, ingredients manager for Scoular. "This diet has entered the mainstream for those consumers interested in weight management and muscle maintenance later in life."

And, stressed Solbar USA's president, Todd R. Watson, protein is popular for consumers concerned with "cholesterol reduction and heart health."

Protein's mass appeal has been helped by a fortuitous overlap. It has numerous dietary sources, which makes protein-enhanced products a convenient option given "the increased popularity of special diets, either by choice or directed by doctors," said David Janow, CEO and president of Axiom Foods.

Groups following such diets include: Baby Boomers, the lactose intolerant, diabetics, adherents to a kosher or vegan lifestyle, celiacs, and children with food or digestive allergies. If the numbers Janow cites are accurate, we're looking at an estimated 150 million to 170 million Americans. The target audience for protein is essentially everybody.

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Variety, therefore, has become essential. "Many consumers are starting to differentiate between the types of protein they consume," said Loren Ward, Ph.D., director, research and development, at Glanbia Nutritionals.

Janow further noted that not all proteins are considered equal. "Consumers are becoming savvy regarding amino acid profiles, protein per serving, allergens, use of chemicals in production, and whether a product is 'green,'" he said.

What worked before remains relevant. With its "relatively good taste and an excellent amino acid profile," Browne said there's increased interest in soy.

"Ten years ago, soy was primarily considered an extender in meat products," said Courtney B. Kingery, marketing and customer development manager for ADM Specialty Products—Oilseeds. "Now, consumers realize the benefits of soy

as a nutritional food choice that increased food quality with environmental benefits compared to animal proteins."

de Haes countered by citing rising demand for FrieslandCampina DMV's dairy proteins in China, India and the Middle East. The rising price is indicative of its "very high functionality in the body in combination with a tolerable taste."

There's also dairy-sourced proteins' value on the production side. "We are reaching a level of complexity that allows tailoring of whey protein and milk protein ingredients for specific nutritional and functional characteristics," Ward said.

Many hot or up-and-coming proteins come from the soil. Aside from soy, Fransiska Anderson, SunOpta's product development manager, considers sunflower seeds "a great ingredient option, as they are high in protein and essential healthy fats." She also listed rice protein and pea protein as on-the-rise "new, alternative protein sources." This may be due to pea protein's smoother texture in food applications, according to Janow.

For Brett Ceurvels, group leader at International Food Network (IFN), notable protein ingredients include anything that's "non-animal or non-dairy." He singled out potato-based proteins, which feature cleaner labels and no allergens.

Animal-based versus plant-based proteins, of course, is not the dietary version of Sophie's choice. Consumers can take both. In fact, they may find benefits in doing so, according to Greg Paul,

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can easily add 6.25 grams of soy protein per serving—this allows the health claim positioning. Increasing inclusion to 10 grams per serving allows a brand to claim that the beverage contains an 'excellent source of protein.' Due to this, beverages are extremely popular for supplemental protein."

At the same time, the range of offerings has grown more sophisticated. "There has long been a growth market for incorporation of soy-enhanced products in prepared vegetarian meals and center-of-the-plate meat alternatives made from extruded soy proteins," Solbar USA's Watson noted. And Paul reported, "customers are expressing interest in a variety of applications, such as pudding, biscotti or other snacks."

But even the simple stuff isn't so simple these days, according to ADM's Kingery. "As the demand for health and wellness products continues to grow, categories like beverages expand to now include energy drinks, high-solids fruit/vegetable juice blends and vitamin-fortified waters," she said.

Smoothies are quickly gaining popularity, Ward observed. "Protein combined with fruit, and in some cases vitamins and minerals, in an RTD [ready-to-drink] format results in a convenient beverage with a good source of protein and other essential nutrients that can be consumed between meals or on the go," he said.

"The definition of a 'bar' has evolved to include a wide variety of textures and products like baked breakfast cookies or co-extruded fruit and grain bars," Kingery added, "leading to the expansion of the ingredients, especially proteins used in the bars."

But "the market may be reaching critical mass in terms of those foods traditionally containing supplemental protein, such as bars and dry mixes," Schmidt warned. "In addition, the competition in those categories is fierce. Growth potential does exist in those categories for finished products that can differentiate themselves functionally. Innovation and growth is going to require more than just new flavors and packaging. Food manufacturers are going to

have to seek out ingredients that can offer functional benefits and cost optimization to enhance finished goods that are convenient and already accepted as part of a typical diet."

Regardless of what's hot and not, formulating soy and other plant proteins into those products remains a tricky issue. "Some of the processing methods currently being used to manufacture various types of plant protein isolates and concentrates were designed for industrial applications and therefore, may be destroying or washing out the bioactive micronutrients naturally contained within the protein sources," Schmidt said. "Research at the Missouri Plant Science Center is working on identifying the specific bioactive components that are responsible for certain health benefits associated with plant proteins. Once the bioactives are identified, specific germplasm can be selected to optimize the bioactive content."

Kingery echoed the common laments. "All proteins, including whey, caseinates and soy, have the potential to impact taste, mouth feel or shelf-life," she said. "One example is formulating fortified beverages. For developers, formulating fortified beverages is like a juggling act. Flavor, viscosity, shelf-life, cost and nutrition are all the balls that get thrown up in the air, and it is up to the developer to get them all moving in unison. It all comes down to using the right ingredients from the beginning to hit the final product specifications."

Companies such as Glanbia Nutritionals "can formulate nutritional bars with extended shelf life and target a variety of textures and sensory characteristics depending on customers' preferences," Ward added.

Once that final product hits the market, consumers will have yet another way of reaping the benefits of protein. Whether the product can find a niche in a competitive market is another story altogether.

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