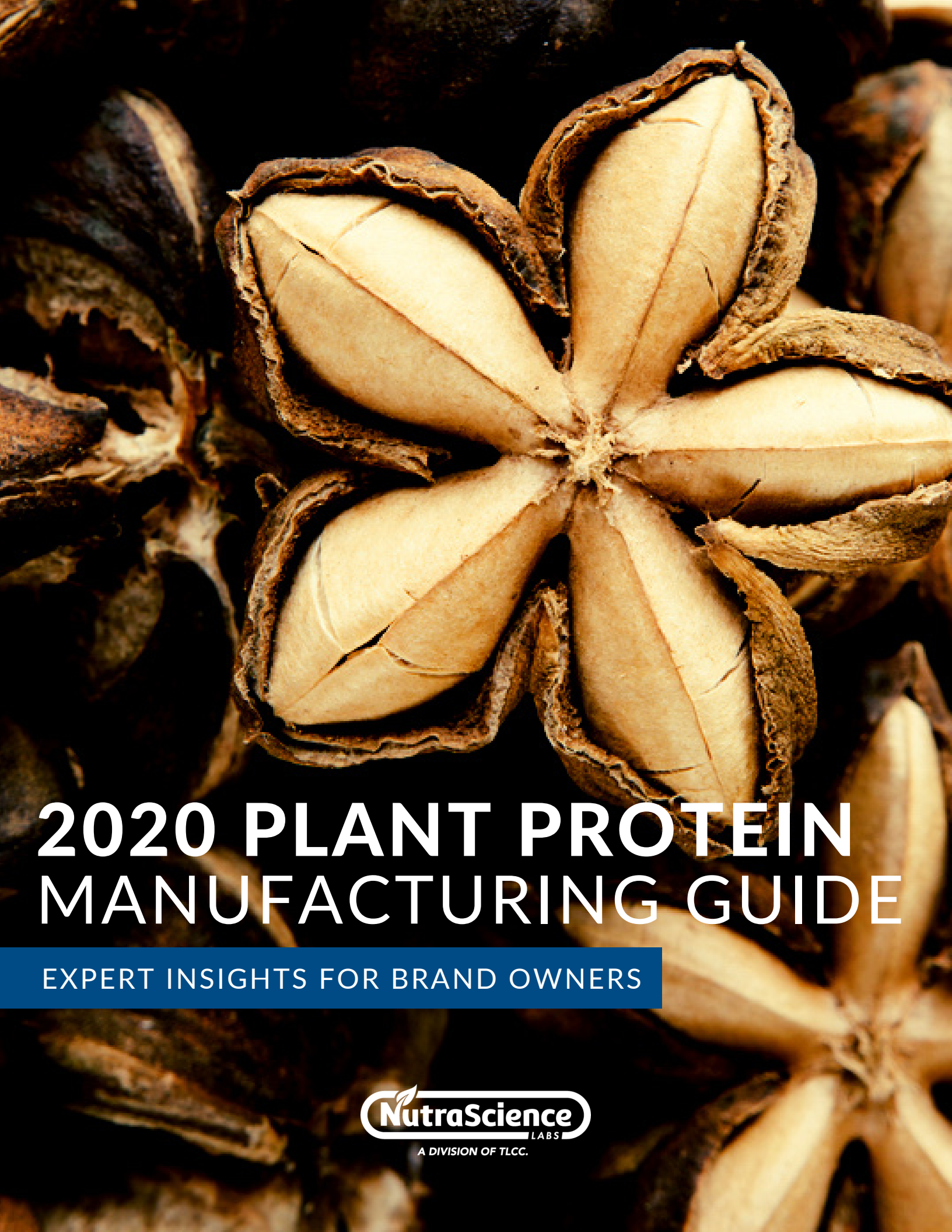


2020 PLANT PROTEIN MANUFACTURING GUIDE

EXPERT INSIGHTS FOR BRAND OWNERS

NutraScience LABS
A DIVISION OF TLCC.

TABLE OF CONTENTS

INTRODUCTION

Protein powders have come a long way since the first waves of muscle-gain formulas that were marketed to the bodybuilders and athletes of the 1970s, 80s, and 90s (think of people like Arnold Schwarzenegger). In those early days, the protein powders that dominated the bodybuilding landscape were made almost exclusively from milk (whey and casein) or eggs.

Oh, how times have changed.

In today's fitness-focused world, protein powders and shakes aren't just for the cut and chiseled bodybuilding elite. They have become nutritional cornerstones for a variety of fitness enthusiasts (both amateur and professional) that includes men and women of all ages with all kinds of dietary needs and goals.

Not surprisingly, this new-found popularity of protein supplements has fueled an uptake in consumption that's resulted in tremendous growth and a global market valuation of more than 14 billion in 2018.[1] By 2027, the global plant-based protein market is expected to rise to $57 billion according to Research and Markets, a global market research warehouse based in Dublin, Ireland.[2]

With such a wide market, dietary requirements and lifestyles to cater to, it's no surprise the selection of protein sources has evolved to meet these changing needs. When paired with the growing demand for vegan, vegetarian, and environmentally conscious alternatives, plant-based protein derived from grains, seeds and legumes are catching up to their animal-based counterparts as the go-to ingredients in some of today's most popular protein powders and supplements.

If you're considering adding a plant-based protein powder into your product lineup, the market and timing are ripe.

ROOTS: THE FIRST PROTEIN POWDER WAS PLANT-BASED

According to those who were there, the first true protein powder product was often recognized for its chalky consistency, poor-taste, and high sweetener content – characteristics that were all too common in the earliest days of the industry that would grow to be worth billions.

Remember, back then concepts like scientific substantiation, quality controls, flavor/formulation development and laboratory testing were subjective measures, at best.

Now, what is surprising about this particular protein supplement pioneer is it was plant-based — made from soybean flour, not whey (as is commonly believed). It wasn't until later that supplement enthusiasts and brands would refine other, equally innovative protein sources, including eggs and dairy.

It would take the sweatband and leg-warmer-fueled fitness enthusiasm of the 1980s for milk-based protein blends to become the most popular source of protein for bodybuilders and other high-performance athletes.

In the decades since, whey and casein have been held as the ideal source of protein for building muscle and aiding recovery among bodybuilders and fitness enthusiasts at large.

But, in just a few short years, shifts in diets, growing social awareness, and new sports nutrition science have had significant impact on the popularity and demand for plant-based sources such as rice, hemp, and seeds – upgrading them to bona fide animal-protein alternatives.

PLANT PROTEINS TODAY: FROM EXCEPTION TO NORM

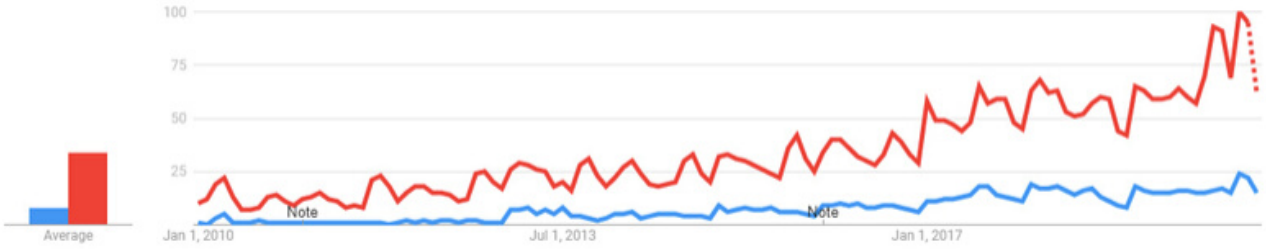
Over the last decade, online searches for plant protein powder have more than tripled. Some of the top keywords searched for plant sources of protein include hemp, chia seed, quinoa and sacha inchi.

What's driving this surge in popularity?

Industry and nutritional experts have linked several key factors to the increased interest in plant proteins. Diet, lifestyle, social preferences, and most significantly – a growing body of groundbreaking research that suggests plant proteins may be comparable to animal proteins for building muscle.

Here's a closer look at some of top trends driving plant protein's rise in popularity.

INTEREST OVER TIME: "Plant Protein Powder" (blue) and "Plant Protein" (red)
United States. 1/1/2010 - 3/31/2020. Web Search.



Data source: Google Trends (trends.google.com)

CONSUMER TRENDS DRIVING DEMAND IN 2020

1: Being vegan is mainstream.

A vegan diet, the stricter cousin of a vegetarian diet, used to be associated almost exclusively with yogis, hippies, animal rights activists, “hipsters” and other subculture social pockets. During the 2010s, beverages and foods like kombucha, kale and chia seeds, all of which had once been virtually unknown, became household names.

From 2014 to 2017, the number of vegans in the United States went up from 3 million to 19 million skyrocketing by 600%, according to research firm GlobalData. Veganism has risen from a once-fringe movement to one that has gone completely mainstream with The Economist declaring 2019 the “Year of the Vegan.” According to the publication, 25% of Americans in the age bracket of 25 to 34 years identified themselves as vegan or vegetarian. Consistent and significant growth in veganism, over the last decade, is mainly fueled by the largest generation – the millennials. This is followed by Generation Z[3], which is choosing a lifestyle that significantly reduces or eliminates the consumption of animal products. This new, ecologically aware generation is behind the phenomenal upward spike in vegan products. There is an increased volume of vegan pantry items at big-box retailers such as Target and Walmart. Fast-food chains like Burger King, Kentucky Fried Chicken, and McDonald’s have also jumped on the vegan bandwagon, introducing vegan versions of their signature dishes[4]. By the looks of it, veganism is here to stay.

The global vegan market, which includes the market for plant protein, is expected to reach USD 24.3 billion at a growth rate of 9% during the period 2015 to 2026, according to Acumen Research and Consulting[5].

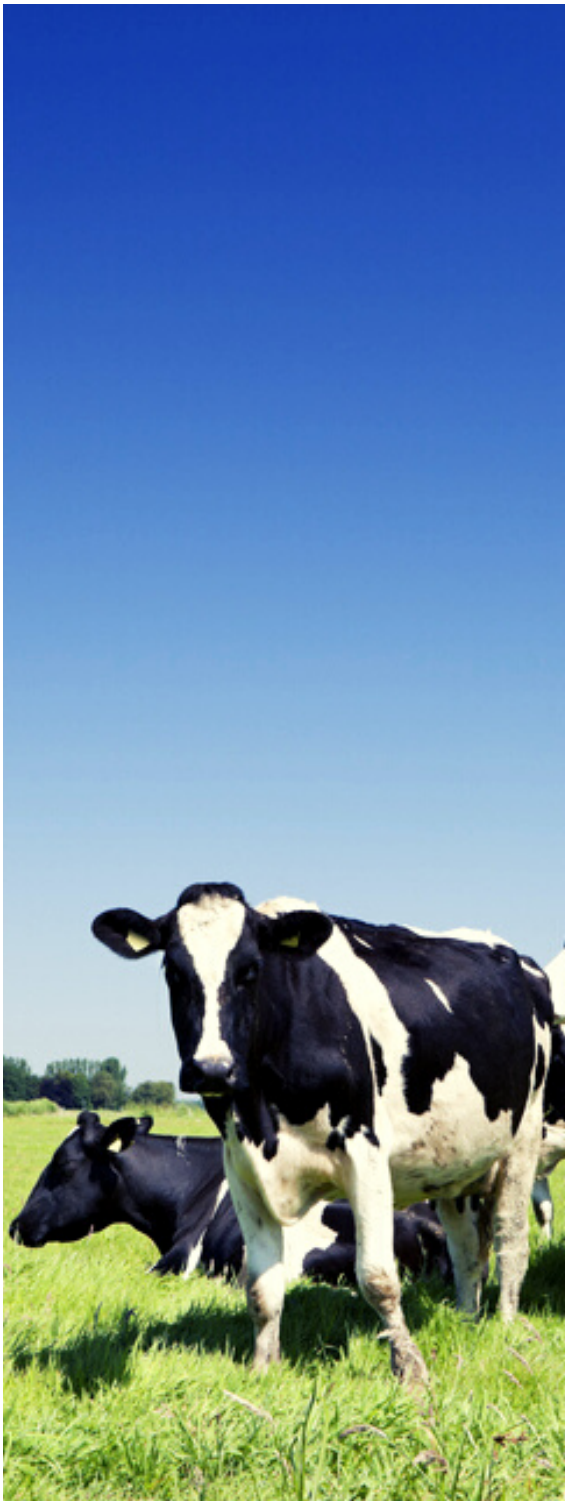
2: When it comes to meat, less is more.

Plant proteins are gaining dollar share among a particularly unexpected group: carnivores. Paradoxical as it may sound, surveys have found that while they have no intention of giving up meat, there is a growing desire to decrease how much they consume. According to a 2017 Nielsen survey, 39% of Americans are seeking to change their eating habits by adding more plant-based proteins into their diets.[6] The survey cites health benefits, such as heart health, nutrition and weight control as motivators for wanting to eat more plant foods.

In another study conducted by the research firm HealthFocus International, 60% of respondents reported that they were scaling back their intake of meat. The firm's general manager, Steven Walton, explains the relationship between plants and meat well: "These are parallel universes with equal power and opportunity. It's fool's gold if you look at these spheres and pit them against each other."

While targeting vegans and vegetarians, Cargill, a global firm for market insights based in Minneapolis, reminds marketers not to overlook flexitarians in their marketing campaigns for plant-based products.[7] While the term "flexitarian" is not conclusively defined, it represents a growing consumer market that is increasingly choosing plant-based products without making a conscious effort.

In high-protein, plant-rich eating plans, such as Paleo & "Keto" (short for "ketogenic"), that promote a "hunter/gatherer" approach to eating, plant nutrition offers a vital source of macronutrients, protein and fiber. In turn, the increased popularity of these diets, and others like them, have contributed to the popularity and demand for plant-based protein powders.



3: Clean eating.

The last decade has been marked by increasing consumer demand for organic, unprocessed foods that offer transparency in growing, handling and manufacturing practices – whether it be meat, fish or produce.

The use of growth hormones and antibiotics in cattle, toxic herbicides and pesticides in growing fruit, and genetically modified organisms or vegetables, have become real concerns for millions of individuals. Their awareness and understanding of the potentially negative long-term effects of these choices on health and the environment have motivated them to seek cleaner food sources.

Plant-based proteins are often seen as a cleaner, more transparent way to consume proteins. This is thanks primarily to labeling- and packaging-conscience brands that are dedicated to providing consumers with the details they want to know about key elements like sourcing, processing, and special certifications (e.g. organic or non-GMO).

According to a Maeve Webster 2019 poll, clean labels are sought by 30% of the American population over the age of 55 and 50% of millennials under the age of 35. While two out of five Americans consciously seek products with clean labels, about three out of four consumers say they want labels to contain nutritional information that is easy to understand.[8]

NutraScience Labs predicts that consumer desire for clean labels and transparency, particularly for consumers interested in health and wellness, will remain strong in 2020 with more consumers purchasing products that have clear product information. With soy being a top allergen, protein powders that have soy-free labels are expected to receive greater consumer interest in the coming years.

THE 6 IN-DEMAND PLANT PROTEINS

For decades, soybeans remained the go-to option for formulators and consumers looking to access a low-cost / high-density plant protein. Things have come a long way since then.

Via today's digital and physical storefronts, consumers have access to thousands of plant-proteins based supplements and formulations that feature just as many unique combinations of today's most popular ingredients.

Through grouping of the right scientific testing for efficacy and quality, cutting-edge manufacturing processes, a near culinary approach to taste, texture and flavor, and (most importantly) demand – the industry and consumers have given this market segment everything it needs to achieve long-term viability.

From grains to seeds to legumes (that are ready to pack a nutritional punch) to a plant-based protein powder or bar, here's a closer look at some of the undisputed plant protein favorites, and a peek at a few of this segment's most promising rising stars.

The Classics: Brown Rice Protein & Pea Protein

Brown rice is a longstanding favorite among vegans for its bioavailability and its dense nutrient profile – one that includes a number of essential amino acids, fiber, and an assortment of vitamins and minerals. Generally easy on digestion, brown rice protein is often recognized for its mild, slightly nutty flavor, which is ideal for blending into soft foods and beverages like smoothies and oatmeal.

Even as a time-tested fan favorite, scientific research has been able to provide even more insight into brown rice protein's effectiveness as a muscle-building powerhouse capable of rivaling the benefits of whey protein.

As published in the Journal of the International Society of Sports Nutrition, researchers performing a double-blind study examining and comparing the benefits of brown rice protein & whey protein found that both proteins were able to support increases in lean muscle mass and promote recovery—with no statistically significant difference between the two.[9]

Another important aspect of rice protein that makes it a winner is its high tolerability. An estimated 15 million Americans suffer from some form of food allergy.[10] With this alarming increase in food allergies, intolerances, and sensitivities among both adults and children – offering clearly labeled allergy-free options can give food and supplement manufacturers a competitive advantage.

According to Global Market Insights, Inc, a market and research consulting company headquartered in Delaware, the US organic rice protein industry is depicted to record a valuation of USD 1.5 million by the end of 2024, mainly fueled by the growing number of vegans.[11]

Made from yellow split peas, pea protein enjoys its position as both a classic and trendy plant-based ingredient. As a long-standing alternative to soy that's significantly more likely to be non-GMO in nature – pea protein has been harnessed by supplement makers. From specialty to mass-market distribution channels, including some of the largest names in health, wellness, and dietary supplements, all have an interest in the pea protein market.

Even food manufacturers have gone so far as to include protein from this small but mighty legume in their portfolios. Its neutral taste and versatile texture allow it to be used in dairy-free alternative foods, such as cheese, yogurt, and even ice cream.

Pea protein has a solid composition of all nine essential amino acids, including several that aren't naturally present in another classic, brown rice protein. Pea protein has been touted for containing BCAAs (branch-chained amino acids) in levels that are comparable to those found in whey protein. BCAAs (including the arginine and lysine commonly found in pea proteins) have been linked to the promotion of lean muscle mass.[12]

Characterized by a good amino acid profile, the global pea protein market is expected to rise by 17.4% reaching USD 313.5 million by 2025.[13]

Rising Star: Sacha Inchi

Pronounced like it looks, sacha inchi (other common names include sacha peanut, mountain peanut, and Inca-peanut) is indigenous to the Amazonian rainforests of Peru where it was cultivated by the Inca and other pre-Columbian civilizations for thousands of years.

Both ancient and modern-day applications for sacha inchi rely on the large seeds that can be found inside the plant's star-shaped pods.

Despite having nearly 3,000 years of history and use, sacha inchi has only recently been "discovered" as one of the most nutritionally dense plant-based sources of protein that also contains significant levels of omega-3 fatty acid. These hard to find nutritional combinations have cemented sacha inchi's place as a bona fide superfood.

This unique nutrient profile has opened a wealth of possibilities for vegan food manufacturers looking to harness the power of this plant-derived alternative to traditional marine- and animal-derived sources of omega-3 fatty acids. Sacha inchi's impressive nutritional profile boasts 8 grams of protein per ounce, eight essential amino acids and 17 times more omega-3 than salmon.

According to Food Navigator USA, sacha inchi is ready for prime time, set to become the next plant-based protein superfood.[14]

Rising Star: Hemp

Unlike many of the plant proteins on our list, Hemp is more than just a market segment – it's a booming industry unto itself. Commonly used in the production of food, textiles, body care products, and supplements (along with dozens of other applications) – the industry that's developed around the hemp marketplace has an impressive estimated net worth of $688 million as of 2016, according to Hemp Business Journal.[15]

Generally, hemp powders and protein powders are made by extracting the hearts of the Cannabis sativa L. plant and creating a seed meal. The resulting product contains 20 amino acids, including essential amino acids arginine and L-tyrosine, plus a robust fatty acid profile that includes omegas 3 and 6, as well as fat-soluble vitamin E. A 30-gram serving of hemp protein will usually deliver about 15 grams of protein.[16]

Like one of its animal-based protein counterparts, collagen, hemp protein can undergo a hydrolyzation process by which large protein molecules are broken down into smaller, more bioavailable peptides for enhanced absorption.

Hemp protein has a decidedly earthy, nutty flavor that for many consumers is best enjoyed when combined with grainy foods, such as oatmeal or peanut butter, or blended into fruit smoothies.

According to Zion Market Research, the global hemp market, which includes hemp-based protein powders, is expected to rise by 6.2% from 2019 to 2026 reaching nearly USD 5 billion in market value.[17]

Rising Star: Chia

Along with being a delicious and versatile supplement protein – many people can't help but associate these tiny seeds with the chia seed-covered terracotta figurines that first became popular in the 1980s. Even though you can still pick up your very own terracotta chia plant pet today, you're more likely to find chia seeds on a grocery store shelf or as the ingredient in your favorite plant protein blend.

Interest in chia seeds as a regular dietary element has been given a boost thanks to the popularity of the "keto" or ketogenic diet. Among internet users, three of the top five queries concerning chia seeds paired the superfood with high protein/plant-nutrition focused programs.[18]

Delivery forms for chia-based food products and supplements tend to be both unique and innovative, allowing consumers to enjoy the immense benefits in a variety of convenient ways. In foods, chia is typically presented in its whole seed form and highlighted as an option that can be sprinkled onto salads or soups. For baking, chia flour and ground seeds have become increasingly popular. For fitness and nutritional supplement applications, it's not uncommon to find chia seeds in the form of a powder, included in a protein blend, and sometimes even as a hydration-minded gel!

The global market for chia seeds is set to expand by 22% from 2019 to 2025 largely due to its rich nutritional profile, reports Grand View Research, a market research company based in San Francisco.[19]

Rising Star: Quinoa

Peru brings us yet another ancient grain with nearly 5,000 years of history. Quinoa, which was first cultivated by the Incas and other pre-Columbian civilizations, remains a key crop (and a growing global enterprise) for the region today.

This popular “grain” is a seed hulled from Chenopodium quinoa. As a plant-based protein powder, quinoa has built momentum thanks to clean food companies including the industry veteran Garden of Life and a popular maker of millennial-focused supplements, Ora Organic. Both companies offer a plant-based protein blend that features quinoa protein (as well as a few of the other stars on our list including hemp and sacha inchi).

The gluten-free seed has been touted as the “mother of all grains”. It’s one of only a handful of plant sources containing all nine essential amino acids, which are vital to our body’s processes because we are unable to produce them on our own. Along with having a “complete protein” status, quinoa is often recognized for its broad nutrient profile, which includes calcium, iron, and B-vitamins.

The quinoa market in the US is expected to rise by 12% from 2018 to 2024.[20] Research and Markets attributes this growth to increasing demand for gluten-free proteins and rising health awareness among the population.[21]

Consumer trends toward veganism, meatless proteins, and cleaner labels are driving the market for plant-based protein powder supplements. NutraScience Labs offers turnkey solutions for all your plant protein manufacturing needs. Our award-winning protein manufacturing services can help you put a plant-based protein powder that tastes great, looks good and has just the right texture.

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ABOUT NUTRASCIENCE LABS

NutraScience Labs, Inc., helps dietary supplement companies bring high-quality formulations to market by delivering best-in-class turnkey contract manufacturing services. Headquartered in Farmingdale, New York, the Firm offers outstanding customer service, competitive pricing, rapid product lead times, and exceptional vitamins and supplement that are custom manufactured in GMP-certified facilities.

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A DIVISION OF TLCC.

(855) 492-7388 / (631) 247-0660 info@nutrasciencelabs.com www.NutraScienceLabs.com

NutraScience Labs, 70 Carolyn Boulevard, Farmingdale, NY 11735