PRONEX™ COMPLETE

Nexxus Foods, Inc., located in Montreal, Canada offers ProNex™ COMPLETE, a unique blend of complete plant proteins, that offers a sustainable alternative to whey protein in Sports and Geriatric Nutrition.

In the animal versus plant protein debate, and with growing overall demand for protein, interest in plant proteins is coming of age.

Multiple factors contribute to this growing interest, such as concerns for the environment (climate change) and animal protection (ethics), food safety, a rise in food intolerances and allergies, sustainability, increased accessibility of vegetarian and vegan food alternatives and the desire for consumers to take on more proactive approaches to their health. Of these concerns, the impact animal meat production has on carbon emissions and climate change has signaled need for rapid change, particularly in richer countries. A recent UN publication reported that animal meat production currently accounts for nearly 15% of global greenhouse gas emissions (UN News, 2018). However, in a recent letter in the Lancet Planetary Health (2019) fifty (50) scientists reported that animal meat consumption worldwide needs to peak by 2030 to avoid a climate crash, because if unchanged by 2030 this sector would account for 49% of the greenhouse gas emissions budget for 1.5°C. Because all the concerns noted above are common among all types of consumers and are growing, plant protein demand is coming from a wide range of the population, not just from vegetarians and vegans. However, market research from Mintel in 2018 indicates that Americans are not yet willing to give up meat entirely, at least not yet, but the trend is growing towards healthy plant-based protein alternatives.

The research showed that 67% of Americans still agree that meat is essential to a balanced diet and just over fifty percent (51%) say that a meal is not complete without meat. In fact, richer countries, like the U.S. consume most of the world's meat. In America, consumers eat 42% more meat, eggs, and nuts than nutritionists recommend (USDA, 2019) and Americans eat nearly 10 times more meat emerging markets, such as Haiti, Tanzania, Ghana, Indonesia and others (OECD, 2019). As people become more concerned with their health and the other issues described above, the population trend is moving towards reducing meat consumption in favor of more healthy protein alternatives. This movement, called flexitarianism, is "semi-vegetarian" or "flexible" in the protein choice (Derbyshire, 2016). Market research from Mintel has shown that 46% of Americans perceive the health benefits of plant-based proteins to be superior to animal proteins, and over three quarters (76%) reveal that plant-based foods are healthy (Mintel, 2018).

In the U.S. the trend towards a flexitarian diet is increasing, with Nielsen reporting that about 43% of the population self-identify as willing to swap plant-based protein for real meat (Nielsen, 2019).

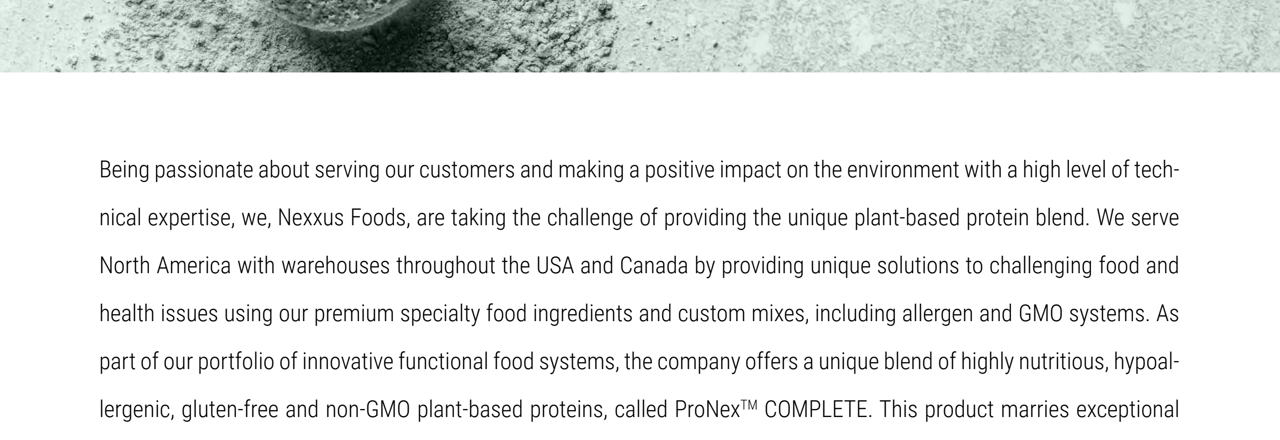
However, this trend decreases significantly with increasing age, with about 63% of millennials identifying as flexitarian, while Generation Xers, Baby Boomers and Seniors are about 40%, 24%, and 22%, respectively (Statista, 2019).

This variability across age groups is likely due in part to how the consuming population tries to balance the key variables involved in their protein choice. By example, the cost of proteins is a major factor in their consideration. Animal protein (meat) is formidable and resilient, with chicken, pork and turkey costing about 2 cents per gram, while meat alternatives and nuts cost more than five (5) times this amount at about 10 cents per gram and 13 cents per gram, respectively (Nielsen, 2019). However, availability and convenience are also major factors in choice towards flexitarianism. As mentioned, other key factors that consumers consider when choosing a protein source are if the source promotes health and wellness, if its source is sustainable, whether the protein is dairy free, due to its potential as an allergen, and, in the case of plant proteins, if the protein source contains all natural ingredients. In Canada, Health Canada this year (2019) recognized that regular intake of plant-based foods, such as vegetables, fruit, whole grains and plant-based proteins are lacking in most Canadian diets. As a result, the agency drafted a food guide for the country that encouraged the consumption of more plant-based proteins (HC, 2019). In effect, the growing trend behind Health Canada's new emphasis, and the element fueling the global demand for vegan proteins is defined as their movement towards national flexitarianism.

Taking these variables into account, the beneficial attributes of the protein, particularly the nutritional benefits of plant-based proteins versus animal proteins, offer insight into why demand for plant proteins is trending significantly higher.

However, this research also shows that taste is the top consideration among all reasons for U.S. adults to choose proteins, outranking even health (39%), and the environment and animal protection (ethical concerns), 13% and 11%, respectively.

Among flexitarians, 51% say inferior taste is a key barrier when considering if they chose a plant-based protein. In addition to taste as a key driving factor in consumers choosing plant-based protein foods, these foods must also be natural, containing no artificial ingredients (41% of consumers responding), and those that are non-GMO (28% of consumers). Indeed, sustainability of any food in the market, irrespective of cost and availability, is highly dependent on its overall eating quality. Its taste and texture must be appealing for repeat sales. The biggest challenge for the plant-based protein category continues to be finding the right balance between taste and health.



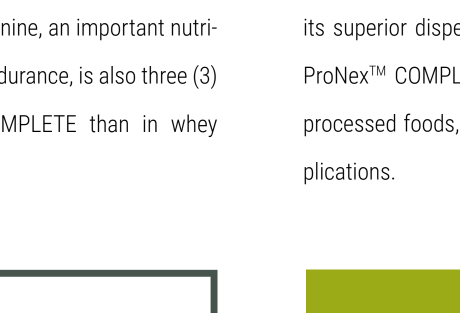
Being passionate about serving our customers and making a positive impact on the environment with a high level of technical expertise, we, Nexxus Foods, are taking the challenge of providing the unique plant-based protein blend. We serve North America with warehouses throughout the USA and Canada by providing unique solutions to challenging food and health issues using our premium specialty food ingredients and custom mixes, including allergen and GMO systems. As part of our portfolio of innovative functional food systems, the company offers a unique blend of highly nutritious, hypoallergenic, gluten-free and non-GMO plant-based proteins, called ProNex™ COMPLETE. This product marries exceptional taste with superior nutrition, as a customized alternative to animal-based proteins, such as those sourced from whey.

COMPARISON BETWEEN PRONEX™ COMPLETE & WHEY PROTEIN ISOLATE

*From: *US Dairy Export Council 2008; **Nexxus 2019 technical data.*

	Whey Protein*	Nexxus ProNex™ COMPLETE**
Total protein content (g/100g)	≥ 80	≥ 80
Essential amino acids, ΣEAAs (g/100g)/% total AA	47	40
Branched-chain amino acids, ΣBCAAs (g/100g)/% total AA	22	19
Branched -chain amino acid ratio (Leu:Isoleu:Val)	2:1:1	2:1:1
Leucine (g/100g)	10	7
Arginine (g/100g)	2	6
PDCASS	1.00	0.95

The ProNex™ COMPLETE product can have major significance in sports and geriatric nutrition. As a complete protein source, it provides all necessary essential amino acids with excellent digestibility. ProNex™ COMPLETE also provides high levels of branched-chain amino acids (BCAAs), essential in promoting protein metabolism, muscle growth and recovery, neural function and regulating glucose and insulin levels. These amino acids yield exceptional repair and maintenance of muscle tissue for sports enthusiasts and senior individuals, equal to whey protein isolate, a commonly used animal-based protein ingredient (refer to Nexxus Foods white paper, 2019). The level of the amino acid arginine, an important nutritional component to athletic endurance, is also three (3) times higher in ProNex™ COMPLETE than in whey protein isolate.



ProNex™ COMPLETE is an example of a unique food ingredient blend that combines exceptional plant-protein sourcing and quality assurance with superior nutritional properties and great taste to result in a complete ingredient system; satisfying consumer needs for a wide range of applications. Apart from its necessary nutrition value, ProNex™ COMPLETE plays an important role in adding technological value to food systems, such as helping improve texture, consistency and mouth feel, product yield, and overall quality to processed foods. Due to its low fat level, high protein content, hypoallergenicity, gluten-free properties, ease of digestion, exceptional amino acid profile, relatively neutral taste, and its superior dispersion and stability in liquid systems, ProNex™ COMPLETE has wide applications in many processed foods, infant foods and sports nutrition applications.

FOR EXAMPLE

***In sports nutritional products**, meal replacement systems and weight management products, such as protein beverages and mixes, bars and smoothie systems, ProNex™ COMPLETE disperses and adds suspension to mix product systems and provides excellent nutrition, particularly in blended protein systems, with neutral taste and aroma;*

***In infant formulas**, ProNex™ COMPLETE is hypoallergenic, has a 97% correlation to the standard requirements for essential amino acids in human breast milk (WHO/FAO/UNU, 2007; Zhang et al., 2013), and has excellent powder formula mixing, producing a smooth, creamy formula.*

ProNex™ COMPLETE is just one example of many unique food blends offered by Nexxus Foods. The company's mission is to be the "go-to" functional food solution provider. Charif Geara, President of Nexxus Foods, says, "partnering with our clients to help them design tailored functional food solutions to their applications often minimizes development time and can make a real difference between obtaining unfavorable results or achieving a successful product launch."

"PROVIDING THIS LEVEL OF SERVICE IS HOW WE GO ABOUT BUSINESS."

References:

Derbyshire, E.J. 2016. Flexitarian diets and health: a review of the evidence-based literature. Front Nutr 3:55. doi: 10.3389/fnut.2016.00055.

Mintel. 2018. Taste is the top reason US consumers eat plant-based proteins. https://mintel.com/press-centre/food-and-drink/taste-is-the-reason-us-consumers-eat-plant-proteins. Retrieved Nov. 2019.

Nielsen. 2019. The F Word: Flexitarian is Not A Curse to the Meat Industry. https://nielsen.com/us/en/insights/article/2019/the-f-word-flexitarian-is-not-a-curse-to-the-meat-industry/. Retrieved Nov. 2019.

Nexxus Foods, Inc. 2019. White paper: ProNex™ COMPLETE: The ultimate whey protein alternative and its significance in sports and geriatric nutrition - unique plant-based proteins are seeing high demand, with branched-chain amino acids receiving major marketing exposure. https://www.linkedin.com/company/nexxus-foods/.

OECD (2019), Meat consumption (indicator). doi: 10.1787/fa290fd0-en (Accessed on 23 December 2019).

Statista. 2019. Americans following alternative diets, by generation 2018. Share of U.S. consumers who identify as flexitarian, vegetarian, or vegan in 2018, by generation. https://statista.com/statistics/875526/share-alternative-diet-us-generation/. Retrieved Nov. 2019.

The Lancet Planetary Health. 2019. Scientists call for renewed Paris pledges to transform agriculture. https://doi.org/10.1016/S2542-5196(19)30245-1.

U.N. News (2018). Every bite of burger boosts harmful greehouse gases: UN Environment Agency. https://news.un.org/en/story/2018/11/1025271.

U.S. Dairy Export Council. 2008. Applications Monograph, Senior Nutrition. Available online: http://www.usdec.org/files/pdfs/2008monographs/seniornutrition_english.pdf. Retrieved 3.14.2019.

WHO/FAO/UNU. 2007. Joint WHO/FAO/UNU Protein and amino acid requirements in human nutrition. Report of a Joint WHO/FAO/UNU Expert Consultation, WHO Tech. Rep Series no. 935. Geneva: WHO.

Zhang, Z., Adelman, A.S., Rai, D., Boettcher, J., and Lönnerdal, B. 2013. Amino acid profiles in term and perterm human milk through lactation: A systematic review. Nutrients 5(12):4800-4821. doi: 10.3390/nu5124800.