

HEMP AS A FOOD PRODUCT

Hemp-derived ingredients such as seeds, hearts (the shelled seeds of the industrial hemp plant) and oils are appearing with more frequency in global food markets, including Europe and North America. In conjunction with the signing of the U.S. Farm Bill, former Food and Drug Administration (FDA) Commissioner Scott Gottlieb stated the classification of these three ingredients is “Generally Recognized as Safe” (GRAS) as food products, or for use in food products. This means additional approvals are not required if marketers do not make health claims. A fourth hemp-derived ingredient, cannabidiol (CBD), is gaining popularity as a wellness product and food ingredient, though the FDA has clearly communicated that CBD is not legal for use in food and beverage product as of mid-2019.

Opportunities

Hemp protein is a non-allergenic, plant-based protein. There will be a potential opportunity to blend hemp protein with other non-allergenic plant based proteins.

Hemp derived ingredients like seeds, hemp hearts, and oil are the most common forms of hemp found in food. The United States imports hemp products primarily from Canada. As such, U.S. companies are beginning to work with hemp as a processed food ingredient given the public interest.

Because of hemp’s relatively high protein content (25%), it is a viable alternative to other high protein, emerging plant-based sources. Hemp protein concentrates and isolates are available and can fortify products, such as bars or cereal. Another possibility is hemp-based protein beverages, though the solubility of the protein may limit the amount incorporated.

Dietary fiber supplementation in snack products is another opportunity for hemp. The seed contains both soluble and insoluble fiber making it a good option for fiber fortification.

Finally, hemp oil presents an opportunity to take advantage of the nutritional benefits of the plant. The fatty acid profile of the oil is 80 percent polyunsaturated, including the essential Omega 6 and Omega 3 fatty acids.

Hemp ingredients could also represent a unique opportunity in the craft brewing industry. Brewers could utilize the flour or hemp hearts in the mash or add the terpenes as a flavor or aroma compound.

Hurdles

Hurdles to the use of hemp-based ingredients include functionality shortfalls, market competition from a multitude of other plant protein options, lack of food grade processing capabilities, and lack of local sourcing for the raw ingredients. Regarding functionality, limited research has resulted in unfavorable comparisons to other, more established plant-based proteins. However, additional research into processing methods combined with breeding and genetic efforts, such as those at the University of Minnesota Plant Protein Innovation Center, should improve the understanding of hemp’s perceived shortcomings and result in higher usage in food products as these challenges are overcome.

With the introduction of the Minnesota Department of Agriculture’s Hemp Pilot Program in 2016, Minnesota has seen a steady increase in the total acreage of industrial hemp. While the total acreage has increased over the past three years, the processing capabilities required to transform the raw agricultural commodity into viable food ingredients have lagged. This lack of viable food grade processing, along with the limited acreage of hemp, has led to the need for importing the majority of food grade hemp ingredients from either Canada or the European Union.

Hemp Food Landscape - Market Overview

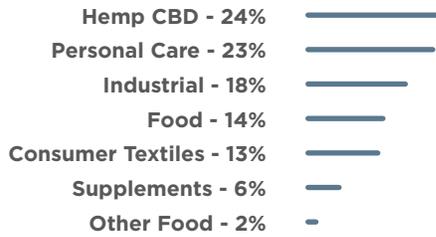


Figure 1

US Hemp-based Product Sales in 2017 (\$795 mil)
Source: Hemp Business Journal

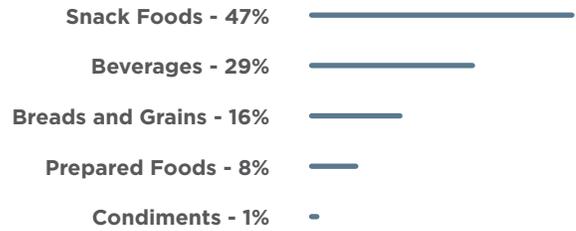


Figure 2

US Hemp-based Food Sales in 2017 (\$112 mil)
Source: Hemp Business Journal

Hurdles

- Hemp protein functionality limited vs other plant proteins
- Market-relevant differentiation from other plant proteins
- Lack of processing for food grade hemp ingredients
- Competition from well-established international supply chains

Product Opportunities

- Hemp protein beverages
- Hemp-based milk replacements
- Hemp protein concentrate and isolates
- Hemp protein blends
- Hemp protein bars
- Hemp as a fiber source
- Hemp oils
- Hemp flour
- Hemp as a brewing or distilling ingredient
- Non-GMO ingredients

Existing Infrastructure

Minnesota is a hub for food companies and processors. With the steady growth of Minnesota hemp acreage, expectations are that investment in food grade hemp processing will also increase.

Processing capability investment opportunities include:

- Seed defatting (cold-press and chemical extraction)
- Protein concentration (concentrates and isolates)
- Protein functionalization
- Flour milling
- Fiber processing

Forecasted Market Potential

There appears to be a strong path forward for hemp oils and proteins in the food market. More regulatory and science-based information is necessary to understand the true market of food products containing CBD. Minnesota is well suited to be a market player in the hemp food sector.

AURI Involvement

AURI expertise:

- Shelf life and packaging guidance
- Regulatory compliance
- Chemical analysis
- Nutrition labeling
- Product development guidance and troubleshooting

AURI can assist clients interested in hemp-based foods to commercialize their products. Our scientists use analytical and food labs to aid companies with nutrition labels, optimize protein powders, analyze cold pressed oils for essential fatty acid content, and provide food product development guidance.

Reach out to AURI to learn more about how AURI can help move your hemp food idea forward!

