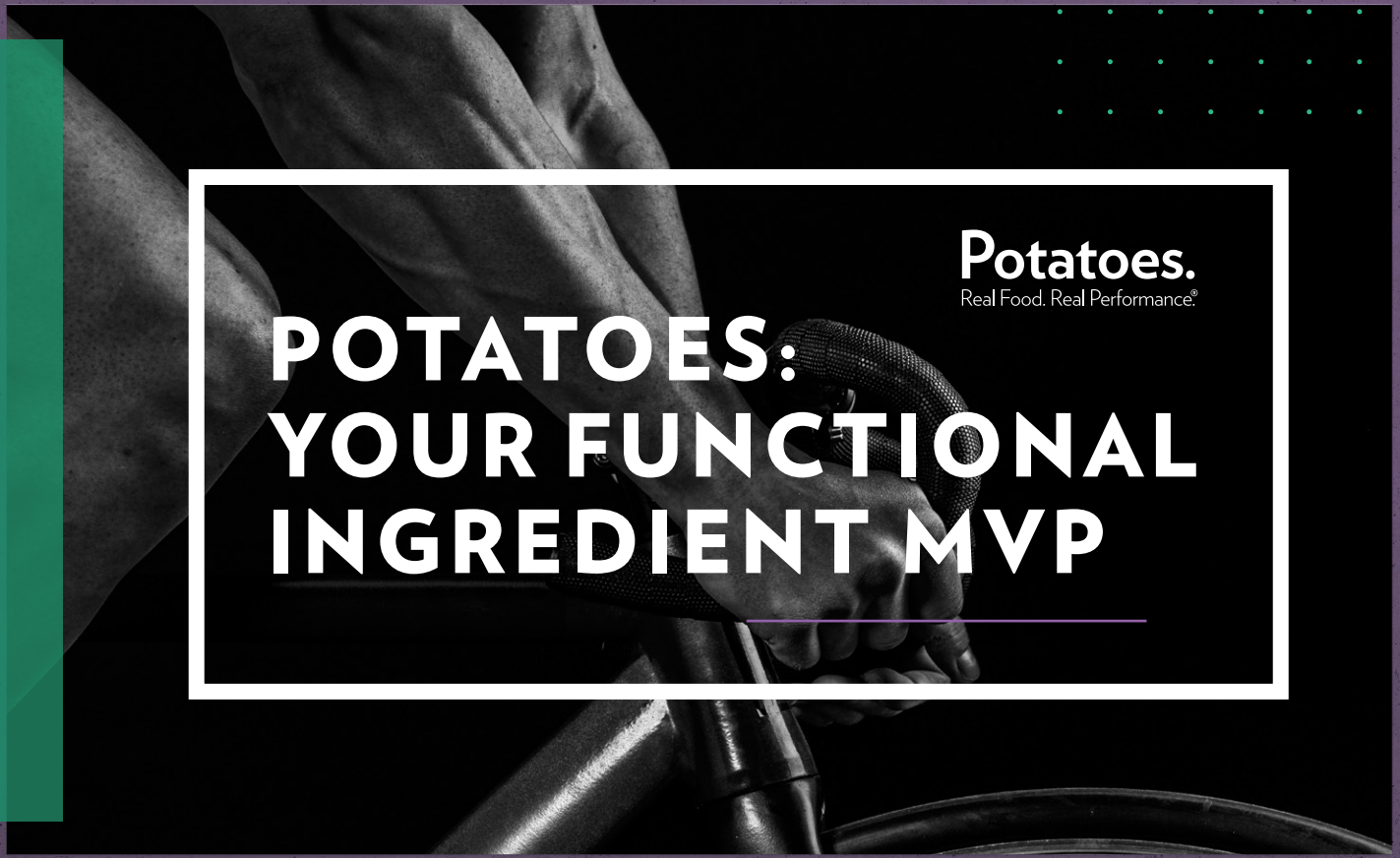

Potatoes.
Real Food. Real Performance.®
POTATOES:
YOUR FUNCTIONAL
INGREDIENT MVP

DISCOVER INNOVATION AND FUNCTIONALITY WITH POTATO INGREDIENTS

U.S. potato products have a well-earned reputation for unparalleled flavor, versatility and nutrition. That's why you'll find these operationally efficient, hardworking and naturally gluten-free potato ingredients in everything from ready-to-eat meals to products used by athletes. Potatoes contribute whole-food nutrition to performance-focused formulations in ways you may never have imagined. Fresh, dehydrated and frozen potato ingredients bring value-added functionality to formulations across categories. Potatoes can add flavor, improved texture, increased yield, convenience and nutrition in multiple applications.

EACH POTATO FORMAT OFFERS UNIQUE ADVANTAGES:

Dehydrated: U.S. dehydrated potato products are a formulation's secret ingredient. That's because dehydrated potatoes enhance flavor, include nutrients and improve texture, all while being shelf stable, convenient and economical. U.S. dehydrated potatoes are made from high-quality real potatoes, just with the water removed and in a more convenient form.

Frozen: U.S. frozen potato products have consistent quality, reliable performance and appealing flavor and texture. From mashed to dices to shreds to wedges and half shells, the variety allows for continuous innovation with this convenient product suitable for any formulation.

Fresh: As America's favorite vegetable[1], fresh U.S. potatoes are a whole-food ingredient that hold their own as snacks or in meals or products. Gradations in size, texture, color and flavor provide more versatile potato choices. That all makes potatoes the perfect base for nutritious, contemporary product ideas and formulations.

U.S. POTATOES AND PRODUCTS DELIVER CONSISTENCY AND QUALITY THAT MANUFACTURERS CAN COUNT ON.

1. Potatoes USA. 2019 Consumer Attitudes and Usage Study, 2019; page 43.

POTATOES ARE IMPORTANT IN PERFORMANCE FOODS

A true vegetable powerhouse, potatoes have impressive energy and nutrition compositions.

CARBOHYDRATES

Potatoes have 26 grams of carbohydrate per serving, which is 9% of the daily value. Carbohydrates are a key source of energy for muscles to help you fuel, perform and recover.[1] Carbohydrates are also important for optimal physical and mental performance.[2]

VITAMIN C

Potatoes have 27 mg of vitamin C per serving, which is 30% of the daily value. Potatoes are considered to be an excellent source of this antioxidant. Vitamin C aids in collagen production—a major component of muscle tissue—and supports iron absorption.[4]

POTASSIUM

Potatoes have 620 mg of potassium per serving, which is 15% of the daily value and more than a medium-sized banana (422 mg per serving).[2] Potassium is an electrolyte essential for muscle function. Potassium is lost in sweat, so it needs to be replenished for optimal performance.[2]

FIBER

Potatoes have 2 grams of fiber per serving, which is 7% of the daily value. Dietary fiber has been shown to have numerous health benefits, including improving blood lipid levels, regulating blood glucose and increasing satiety.[5]

IRON

Potatoes have 1.1 mg of iron per serving, which is 6% of the daily value and more than half the amount in a 3-ounce beef patty (2.06 mg per serving).[3] Iron is a mineral involved in making proteins that carry oxygen to all parts of the body, including to the muscles.

VITAMIN B6

Potatoes have 0.2 mg of vitamin B6 per serving, which is 10% of the daily value and considered to be a good source. Vitamin B6 plays important roles in carbohydrate and protein metabolism.

PROTEIN

Potatoes have 3 grams of protein per serving. Protein is a key component of muscle and an important nutrient for athletic performance.

1. Burke LM, Hawley JA, Wong SH, Jeukendrup AE. Carbohydrates for training and competition. *J Sports Sci*. 2011; 29(Suppl 1):S17–27.
2. Thomas DT, Erdman KA, Burke LM. Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and athletic performance. *Journal of the Academy of Nutrition and Dietetics*. 2016; 116(3):501–528.
3. USDA Food Composition Database. USDA Food Composition Databases v.3.9.5.3_2019-06-13. https://ndb.nal.usda.gov/ndb/ Accessed September 5, 2019.
4. Pullar JM, Carr AC, Vissers MCM. The roles of vitamin C in skin health. *Nutrients. 2017*; 9(8):866.
5. Dahl WJ, Steward ML. Position of the Academy of Nutrition and Dietetics: Health implications of dietary fiber. *J Acad Nutr Diet*. 2015 November; 115(11):1861–70.

SOME OF THE MANY BENEFITS OF FORMULATING WITH POTATOES

ENHANCED BROWNING/COLOR

- Potatoes provide even browning to baked goods. This occurs due to the natural sugar found in potatoes.
- Potato ingredients work well when breading or crusting food items to achieve a golden-brown product that is visually appealing, uniform and less prone to burning.

EXCELLENT GLUTEN-FREE OPTION

- Potato ingredients are perfect alternatives to wheat in many applications, specifically where wheat is used in breading and coatings or fried and baked products.
- Potato ingredients added to broths, gravies, sauces and stews provide thickening capabilities, offering a gluten-free replacement.
- Gluten-free baked goods often do not brown as well as gluten-containing products. Potatoes, in all formats, are a great alternative to help attain a golden hue.

IMPROVED ADHESION

- Because potatoes hold moisture due to their cell structure and free starch availability, they create a nice barrier between the base product and the breading or crusting system. This allows for an evenly coated finished product, which, in turn, allows for even baking or frying and a crispy coating.

IMPROVED TEXTURE AND FLAVOR

- Potatoes in baked goods produce breads with a crisp, even golden crust and a soft and fluffy interior texture. Additional benefits of various potato products include:
  - Softer, cakier texture
  - Chewy, flaky texture
  - Reduced grittiness and gumminess
  - Light, crisp texture in snacks
- Potatoes are clean label and provide a neutral flavor, well suited to enhance and complement the flavors of the other ingredients.
- When used as a binder or filler, potato ingredients help to create a moist product, resulting in superior mouthfeel compared to a traditional breadcrumb or wheat-based product.
- Improved machinability: Potatoes used in doughs and baked goods create a soft dough that absorbs extra moisture in the mixing stage, producing a very smooth and pliable dough. It is easy to form and portion, helping to eliminate a tacky texture. Potatoes act as a natural dough conditioner, making the yeast easier to handle.

EXTENDER AND YIELD IMPROVEMENT

- Potato ingredients can be added to ground meat products before cooking, thus requiring less meat per serving and potentially providing a cost savings.
- Adding potatoes to doughs results in increased absorption during hydration, which may substantially increase dough yield for baked goods.

HUMECTANT OR SHELF-LIFE EXTENDER

- Potato ingredients hold moisture, which can act as an anti-staling agent, improving shelf life by helping to prevent the finished product from drying out.
- Potato ingredients can also serve as a crumb-softening agent in many applications, with no alteration of the taste profile.

COLD-SET ENERGY BARS

- Potatoes are a good source of potassium and are a familiar, whole-food addition to gluten-free, vegan, plant-powered bars designed for athletes.
- Dehydrated potato shreds lend clean-label structural cohesion and moisture retention. By absorbing and holding water, the bars maintain a palatable texture throughout their shelf life.
- Lightweight and easy to store, dehydrated potatoes scale, blend and perform well in bar production.
- Potatoes offer complex carbs for long-lasting energy, which is critical for athletes.
- The versatile and neutral base formula can be extended to sweet or savory line extensions, suitable for all dayparts.

Customer demand continues to grow for plant-based[1], allergen-free[2] and delicious grab-and-go items[3], so reach for potatoes as your ingredient MVP. The versatility, functionality and affordability potatoes provide make them the perfect multifunctional ingredient to include in any formulation.

1. The Plant Kingdom, Top 10 Trends 2019, Innova Market Insights, July 2019.
2. Free From Market Growth: Increase in Global Allergy Rates and Impassioned Lobbying Spur Regulatory Upheaval, Innova Market Insights, October 2019.
3. Snacking: The Definitive Occasion, Innova Market Insights, September 2019.

GLUTEN-FREE BAKED BARS

- Dehydrated potato flakes supply bulk and starch to baked, sweet-savory and shelf-stable bars. They help the dough hydrate quickly, bind other ingredients and improve baking performance.
- Dehydrated potato shreds contribute structure and appealing texture while also visually signaling that these bars contain hash browns.
- Dehydrated potatoes are a great gluten-free alternative. They can replace wheat, oat, rice and tapioca flours commonly used in baked bars.
- Potatoes contribute potassium, fiber and complex carbs to help boost the nutritional composition of the finished product.
- Dehydrated potato products help nudge this gluten-free snack toward a recognizable muffin-like texture: softer and chewier, like a traditional baked good that consumers crave.

PLANT-BASED PERFORMANCE BOWLS

- Athletes will appreciate that these bowls contain nutrient-dense complex carbohydrates, potassium and vitamin C, a great base to a pre- or post-activity meal.
- Flavor combinations are endless when combining the complex carbohydrates from diced potatoes with other ingredients, resulting in a satisfying, nutritionally dense and convenient option.
- Fresh or IQF diced potatoes are the perfect choice for maintaining a firm bite and recognizable shape from processing through storage and finished prep.
- Bowls like this can be distributed frozen and easily microwaved by the consumer.

PLANT-BASED FUEL

Potatoes are a source of nutrient-dense carbohydrates—the primary fuel for your brain and a key source of energy for muscles. These include complex carbs like starches, simple sugars and soluble and insoluble fiber.

CARBOHYDRATE

PORTABLE POTATO POPPERS

- Whole marble-sized potatoes or halves and quarters—boiled and simply seasoned—reinvent themselves as an on-the-go vegetable fuel for endurance athletes.
- Bite-sized precooked potatoes make for an easy fuel to eat during athletic events or as a portable on-the-go snack.
- This real, whole-food, plant-based, gluten-free and nutrient-dense snack is a great option for all activities.
- Potatoes' mild, neutral flavor plays well with a variety of seasoning and flavor profiles, making them enjoyable and appealing to all age groups, and less likely to cause the palate fatigue that's common with other snacks and performance foods.

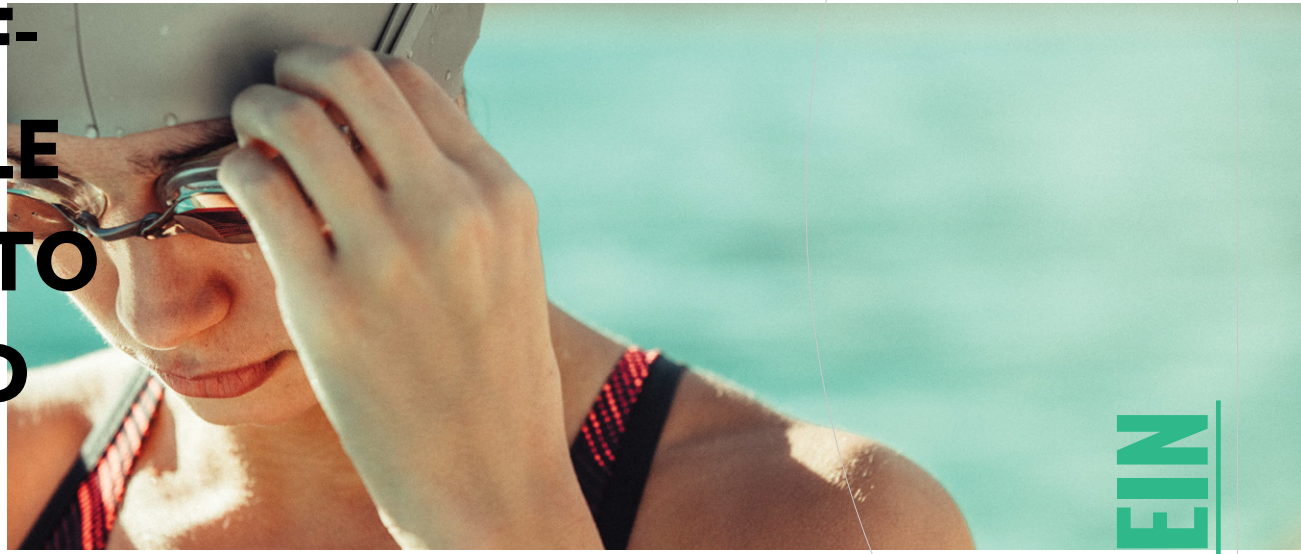
ATHLETE INSIGHTS

Athletes are excited by the idea of new and healthier ways to prepare potatoes as they already rate potatoes highly on a number of attributes, including sustained energy, provides essential vitamins and minerals, good source of potassium, healthy for you and help fuel everyday activities.[1]

In fact, as more data continues to be presented, athletes' beliefs on the power of the potato have increased, including attributes like "provides sustained energy" (up 6 points YOY) and "healthy for you" (up 5 points YOY).[1]

1. Snacking: The Definitive Occasion, Innova Market Insights, September 2019; page 20.

SHELF-STABLE POTATO SALAD



PROTEIN

- Consumers are increasingly looking for portable[1] plant-based snacks[2]
- Potatoes hold their shape and texture during retort processing, allowing for efficient and shelf-life-promoting packaging.
- Shelf-stable potato salad makes a great on-the-go snack or addition to a packed lunch or other portable meal.

1. Snacking: The Definitive Occasion, Innova Market Insights, September 2019.
2. The Plant Kingdom, Top 10 Trends 2019, Innova Market Insights, July 2019.

NUTRITION FACTS

The 3 grams of protein in one skin-on 5.3-ounce potato exceeds that of all other commonly consumed vegetables, except dried beans.[1] As a key component of muscle, protein is an important nutrient for athletic performance.

Protein quality is often expressed in terms of its "biological value," which considers the amino acid profile of the protein along with its bioavailability. Egg protein has a biological value of 100 and is considered the reference protein. Potatoes have a relatively high BV of 90 compared with other key plant sources of protein (e.g., soybean with a BV of 84 and beans with a BV of 73).[1,2]

1. Woolfe JA. *The Potato in the Human Diet.* 1987. Cambridge University Press.
2. McGill CR, Kurilich AC, Davignon J. The role of potatoes and potato components in cardiometabolic health: a review. *Ann Med.* 2013;45(7):467-73.

TOP BENEFITS OF FORMULATING WITH POTATOES

1	Gluten free
2	Nonallergenic
3	Recognizable
4	Comply with clean-label expectations
5	Mild, neutral flavor
6	Grown in the USA

A SECRET INGREDIENT FOR TOASTER PASTRIES

- Potatoes create a deliciously versatile, golden pastry suitable for both sweet and savory applications.
- Potatoes are a clean-label alternative to replace gluten-containing dough ingredients and lend themselves to binding and moisture retention for shelf-stable fillings.
- Potato flour and dehydrated flakes have the right balance of starch to tenderize gluten-free pastry crusts, adding a soft chew while slowing the staling process.
- The potato ingredients contribute a mild, appealing flavor and aroma, making them a flexible alternative to stronger-tasting grain or starch ingredients.
- Potato flakes bind low-moisture filling ingredients, preventing syneresis and allowing for a water activity within the shelf-stable threshold.

PLANT-BASED POTATO ENERGY GEL

NUTRITION FACT

A medium (5.3 oz) skin-on potato contains 620 mg of potassium.

Potassium is an important electrolyte that aids in muscle, cardiovascular and nervous system function.

POTASSIUM

- Potatoes supply natural sugars that provide athletes with a less-sweet energy source for their performance activities.
- Dehydrated potato flakes are treated with an amylase enzyme to convert the starch to sugar, creating a smooth potato slurry.
- The potato-slurry base is neutral in flavor, supporting multiple potential profile extensions: sweet, savory, tart, even flavor-free.
- The gel viscosity can be made more or less concentrated to suit application needs.
- Per a randomized controlled cycling-time trial study, whole potatoes are effective as an exercise fueling strategy. When consumed during a cycling time trial, they were shown to improve performance as much as a commercial sports gel product and better than water.[1]
- Potatoes are wholesome real-food options that can be incorporated into exercise performance fueling strategies to provide variety and choices for athletes beyond processed sport gels.[1]

1. Salvador, A. F., Mckenna, C. F., Alamilla, R. A., Cloud, R. M. T., Keeble, A. R., Miltko, A., Burd, N. A. (2019). Potato ingestion is as effective as carbohydrate gels to support prolonged cycling performance. *Journal of Applied Physiology*.

PERFORMANCE ATHLETES PREFER POTATOES

EAT POTATES

89% of Performance Athletes

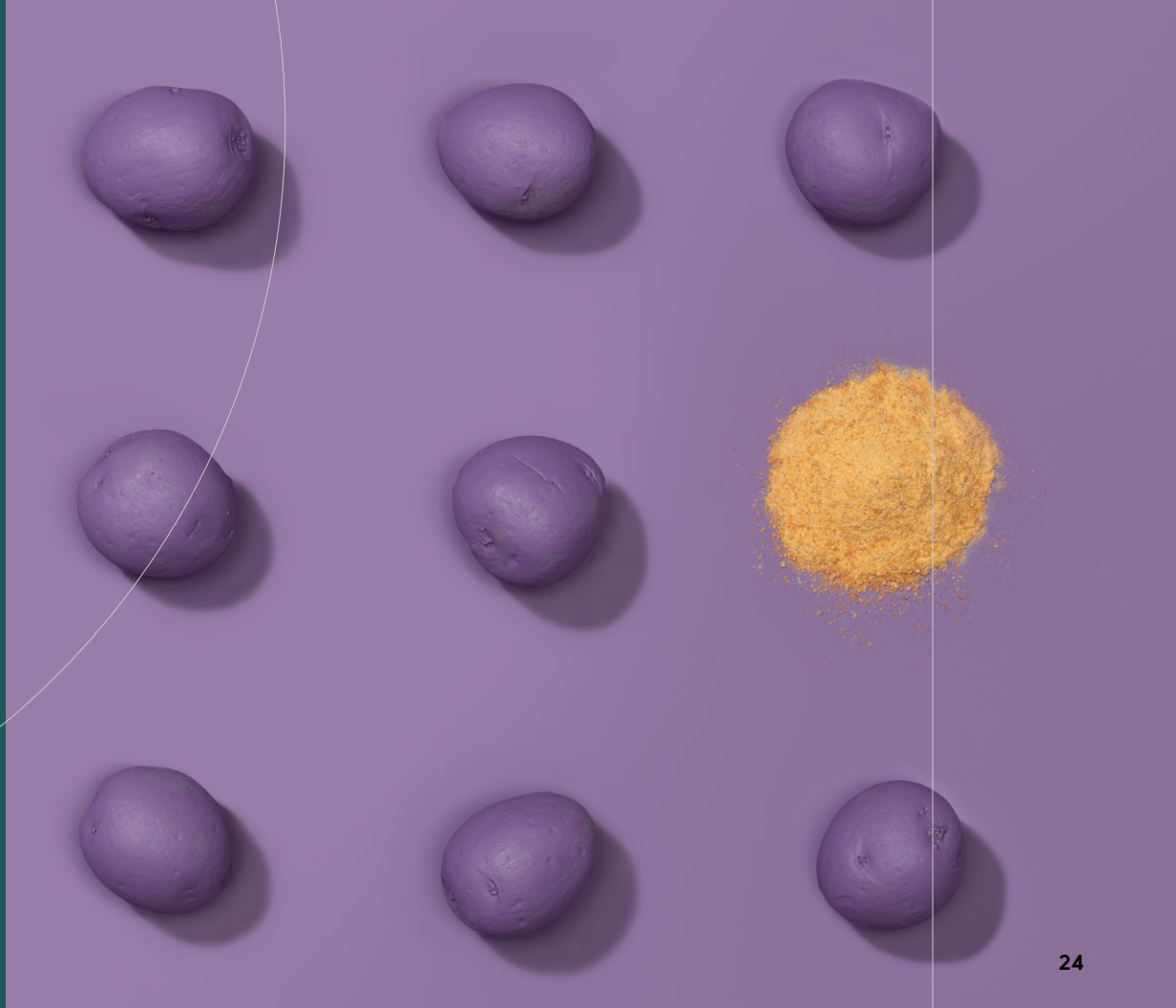
79% of Active Athletes

ON A WEEKLY BASIS OR MORE[1]

1.Potatoes USA. 2019 Consumer Attitudes and Usage Study, 2019; page 16.

POTATO SUGAR

- This unique plant-based sugar is made using dehydrated potato flakes that are treated with an amylase enzyme to convert the starch to sugar. This creates a potato slurry that’s smooth and a not-too-sweet form of energy. The slurry is then dried into a powder.
- This potato-based sugar could be perfect for pH-neutral products or applications where sweetness is not desired but the sugar is beneficial (e.g., a savory energy bar, gel or coating).



SPORTS DRINK WITH POTATOES FOR

WHOLE-FOOD ENERGY

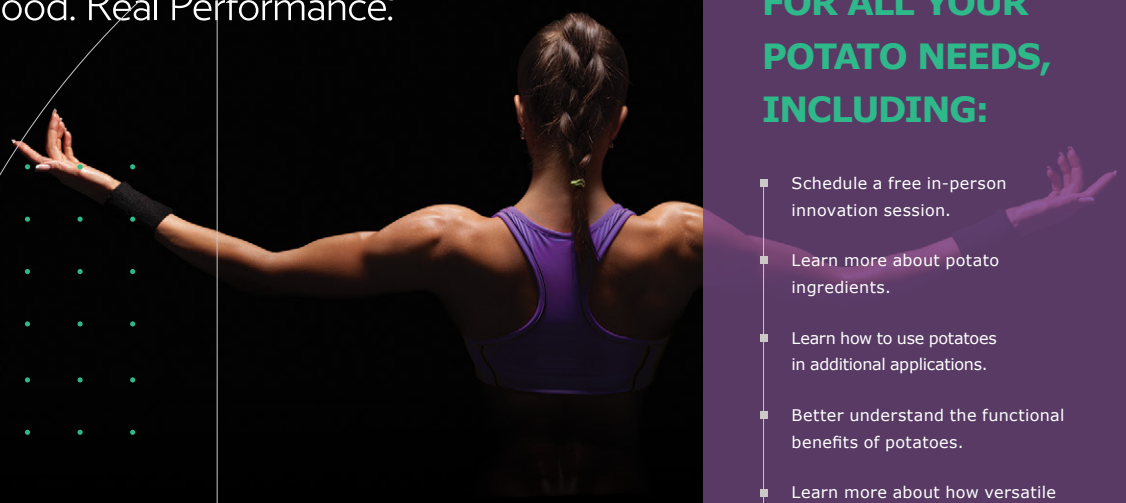
- A potato-based sports drink supplies essential carbohydrates and naturally occurring potassium for active hydration.
- Utilize potatoes in a sports drink to provide a vegan, clean and delicious vegetable-powered beverage.
- Capture consumers' attention with potatoes as an unexpected alternative to sugary, artificial energy options.
- With proper processing, a shelf-stable product can be achieved.

VARIETY

This neutral beverage base can be flavored in many ways.

Potatoes.

Real Food. Real Performance.®



Potatoes USA

GET IN THE GAME WITH U.S. POTATOES

What Will You Think Up Next?

CONTACT POTATOES USA FOR ALL YOUR POTATO NEEDS, INCLUDING:

- Schedule a free in-person innovation session.
- Learn more about potato ingredients.
- Learn how to use potatoes in additional applications.
- Better understand the functional benefits of potatoes.
- Learn more about how versatile potatoes are.
- Discover how potatoes can be your ingredient solution.

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