Drive Value & Demand with Modern Blueberry Innovations

Add a Boost of Blue

blueberries



Add a Boost of Blue to Your Innovations

Innovate better with one of the most versatile fruits.

At the U.S. Highbush Blueberry Council (USHBC), we've been inspiring manufacturers and product developers with bold new blueberry applications for over 20 years, introducing the power of this small but mighty berry into every corner of the grocery store and across product categories. With a broad range of formats offering a variety of textures, color intensities, and levels of natural sweetness, plus compelling functional health equities and top-notch consumer demand, blueberries are your key to truly cutting-edge innovation.

Visit our Food Manufacturing Hub at <u>foodprofessionals.blueberry.org/for-food-</u> <u>manufacturing</u> and add a boost of blue to your product innovation with our latest insights and inspiration. With blueberries, the possibilities are endless.

Inspiring Innovation and Sales

Blueberries boost the bottom line, so adding them to your product development is smart business, too.

As a familiar favorite with a notable health halo, blueberries encourage product trial, and their vibrant hue and beloved flavor can translate to elevated sales.

Not only do blueberry purchasers continue to rank them as their number one favorite fruit (over strawberries and bananas!)¹, but 81% of manufacturers agree that adding blueberries to their products provides consumers with perceived or additional health benefits? Plus, blueberries' color and flavor add to their popularity, with a majority of manufacturers surveyed citing that blueberries provided added value to their customers?

Blueberry Customer Segmentation, Winter 2020, Topline U&A Study Wave 2, Jan/Feb 2020.
Blueberries in Food Manufacturing, August 2019 Report, Rose Research.



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DRIED BLUEBERRY, ALMOND & CAPERBERRY COUSCOUS

Growth Areas for Blueberries

BLUEBERRY COMPOUND BUTTERS

Over the next five years, the blueberry ingredient market is anticipated to increase 7.3[%] CAGR³ The growth of blueberries in the United States appears to be driven by a desire for superfruits and antioxidants. Blueberry ingredients are increasing in beverages, confectionery, and beauty and personal care formats.³ While the United States has the largest market for blueberry ingredients, Asia Pacific is the fastest-growing market.⁴

Drive Demand with the Blueberry Health Halo

The health benefits of blueberries are a top purchase driver for consumers. Their immuneboosting and antioxidant content are consistently identified as highly desirable benefits across global markets⁵ A growing body of evidence suggests blueberries can be part of eating patterns to improve your health—from cardiovascular and brain health, to gut health and insulin response, especially as part of an overall healthy lifestyle. So put the health benefits of blueberries to work on your packaging to drive interest and generate demand.

- 80 calories per 1 cup serving
- Virtually no fat and low in sodium
- A good source of vitamin C⁶, which helps the immune system work properly
- A good source of dietary fiber⁶ (3.6 grams per serving)
- Contain polyphenols including anthocyanins (163mg/100g fresh berries), which impart the blue color⁷
- High in manganese, which helps the body process cholesterol and nutrients like carbs and protein
- Certified as heart-healthy through the American Heart Association[®] Heart-Check Food Certification Program

VISIT <u>BLUEBERRY.ORG/HEALTH-</u> <u>BENEFITS</u> FOR MORE RESEARCH AND DEMAND-DRIVING BLUEBERRY INSIGHTS.

- Mordor Intelligence, Global Blueberry Extract Market
 – Growth, Trends, and Forecasts (2021–2026) with
 COVID-19 Impact Analusis. 2020.
- Padilla, USHBC Global Opportunity Assessment, December 2020.
- 6. U.S. Department of Agriculture, Agricultural Research Service. FoodData Central, 2019. fdc.nal.usda.gov.
- USDA Database for the Flavonoid Content of Selected Foods, Release 3.1 (2014).

Researchandmarkets.com. "Business Wire." Business Wire [United States Blueberry Market Growth, Trends, and Forecasts Report 2020–2025 With Covid-19 Impact Analysis - Researchandmarkets.com], Sept. 17, 2020, https://www.businesswire.com/news/ home/20200828005289/en/Global-Blueberry-Ingredient-Market-Analysis-and-Forecasts-2020-2025-Increased-Demand-for-Healthy-Snack-Products-is-Driving-Market-Growth---ResearchAndMarkets.com.

A Format for Every Application

Blueberries are offered in a vast array of formats, specs, and pack solutions to meet nearly any product development requirement or category, opening the door for endless innovation possibility. Plus, with lower labor and lower waste qualities compared with other fruits, blueberries are a favorite among R&D teams.

- IQF: HARVESTED FRESH BLUEBERRIES, INDIVIDUALLY QUICK FROZEN FOR FRESH FRUIT IDENTITY. // Use in both sweet and savory prepared sauces or marinades, baked goods, frozen novelties, or prepared meals.
- CASE OR BLOCK FROZEN: HARVESTED FRESH BLUEBERRIES THAT ARE BLAST FROZEN, TUMBLED (TO SEPARATE ANY CLUMPS AND LOOSE ICE), AND POLYBAGGED, TYPICALLY IN 30LB TOTES. // Uses mirror that of IQF, especially in formulations where fruit is puréed, blended, or otherwise broken down beyond individual berries.
- INFUSED (juice, sugar): FRESH OR FROZEN BLUEBERRIES INFUSED WITH A SYRUP, DEHYDRATED TO 11-16% MOISTURE. // Use as a sweet and chewy inclusion in baked goods, prepared sauces, snacks, or emulsified meat products (meatballs, sausages).
- FREEZE DRIED: FRESH OR FROZEN BLUEBERRIES, FLASH FROZEN, ALL MOISTURE REMOVED IN VACUUM CHAMBER. // Use in products requiring rehydration (dried meals, snacks, cereals) or to add flavorful texture to spices, seasonings, or toppers.
- JUICE CONCENTRATE: HARVESTED FRESH BLUEBERRIES, CRUSHED AND VACUUM CONCENTRATED. // Use in beverages, marinades, or glazes, or use to optimize color in your formulations.
- CANNED (syrup, water): FRESH OR FROZEN BLUEBERRIES, CANNED WITH WATER OR LIGHT TO HEAVY SYRUP. // Use in chutneys, compotes, sauces, baked goods, beverages, and spreads, or use the liquid as a water replacement in your formulations.
- **CONCENTRATED BLUEBERRY POWDERS:** DRIED, GROUND WHOLE BLUEBERRIES WITH VIBRANT COLOR AND INTENSE FLAVOR. // Try in dry rubs, seasoning mixes, garnish, or finishing powder, or use where final blueberry weight is a consideration.
- BLUEBERRY JUICE CONCENTRATE POWDERS: BLUEBERRY JUICE CONCENTRATE, DRIED AND POWDERED. FINE GRAINED, INTENSE COLOR AND FLAVOR. // Use as a thickening agent in sauces, marinades, liquids, or beverages, or use where final blueberry weight is a consideration.
- **PURÉE:** HARVESTED FRESH BLUEBERRIES, CRUSHED, FINISHED, THEN PASTEURIZED OR COLD FILLED. // Use in frozen novelty items, marinades, glazes, beverages, sauces, and fruit snacks or to thicken sauces, liquids, and beverages.

VISIT <u>FOODPROFESSIONALS.BLUEBERRY.ORG/FOR-FOOD-MANUFACTURING</u> FOR INFORMATION AND DETAILS ABOUT OUR RANGE OF PRODUCTS AND SUPPLIERS.

Innovate better with one of the most versatile fruits.

FROM THE BENCH

One of the best things about developing consumer products with blueberries is the versatility of the fruit. No matter the type of formula, there's a blueberry for it. I like using multiple blueberry formats in a formulation because it means I can bring out a combination of texture, flavor, color, and function.

CHEF DINA PAZ, PRODUCT DEVELOPMENT



Snacks with Valuable Health and Flavor Appeal

With blueberries in your formulations, simple snacking products can become a craveable, functional choice thanks to the proven flavor demand and strong nutrition story that blueberries provide.

FRESH BLUE CASHEW SUPER BARS are a fresh snacking sensation with a tender, creamy cashew and white chocolate base spiked with vibrant blueberries and wholesome crunchy puffed quinoa for a permissibly indulgent and texturally engaging treat.

THE BLUE BOOST: A BLUEBERRY TRIFECTA, BLUEBERRY JUICE POWDER AND CONCENTRATE BOTH SHINE IN THE BLENDED BASE TO BRING VIBRANT COLOR AND FLAVOR, AND DRIED BLUEBERRIES ADD CHEWY TEXTURE AND EVEN MORE NUTRITION-CUING BLUEBERRY IDENTIFICATION.

BLUEBERRY-GINGER FRUIT ROLL SNACKS aren't your basic kids' fruit snack, but thanks to the versatile power of blueberries, a burst of fresh ginger, and hint of black pepper, they've gotten the upgrade they deserve.

THE BLUE BOOST: PARTIALLY THAWED FROZEN BLUEBERRIES PROVIDE A NATURAL, LIGHTLY SWEET FLAVOR BASE AND THE COLOR INTENSITY THAT HOLDS UP AND REMAINS DISTINCTIVE AFTER DEHYDRATION.

MAKE IT

In a high-powered blender, process 1,000 grams partially thawed IQF blueberries, 200 grams applesauce, 94 grams fresh lemon juice, 72 grams honey, 28 grams fresh ginger purée, 2.2 grams citric acid, and 2 grams black pepper until smooth. Pass mixture through a single mesh strainer. Place approximately 1.5 cups purée on parchmentlined dehydrator trays and spread to ¼" thick. Dehydrate at 125°F for 6 or more hours until leathery and pliable. Store between parchment paper. (Yield: 24 10-to-12-gram servings)

VISIT <u>FOODPROFESSIONALS.BLUEBERRY.ORG/FOR-FOOD-</u> <u>MANUFACTURING</u> FOR THESE COMPLETE FORMULATIONS AND EVEN MORE BLUEBERRY INSPIRATION.



According to a study prepared for USHBC, **93**[%] of consumers consider blueberries to be a health food⁸, so they're the perfect choice to upgrade formerly sugary snacks into wholesome, permissible treats.

FRESH BLUE CASHEW SUPER BARS

Nutrition F	acts
Serving size 1	bar (55g)
Amount per serving Calories	320
	Daily Value*
Total Fat 19g	24%
Saturated Fat 5g	25%
Trans Fat 0g	
Cholesterol 5mg	2%
Sodium 95mg	4%
Total Carbohydrate 23g	8%
Dietary Fiber 3g	11%
Total Sugars 13g	
Includes 7g Added Sugar	s 14%
Protein 9g	
Vitamin D 0mcg	0%
Calcium 77mg	6%
Iron 2mg	10%
Potassium 363mg	8%

Prepared Foods Drive Demand at Retail

FROM THE BENCH

By using juice concentrate in the base, I could focus on creating a vibrant, striking color, and then mixing in canned blueberries at the end allowed the berries to retain their shape and add to the overall product ID that consumers look for. The intentional color bleed in this dish creates gorgeous streaks of blue and purple that are a showstopping visual for today's Instagram world.

CHEF DINA PAZ, PRODUCT DEVELOPMENT

Consumer consumption of blueberries continues to grow. In fact, it has grown more than 600[%] between 1994 and 2014⁹, so perk up your prepared foods with the versatile flavor and texture of the most beloved berry.

CREAMY BLUE TAMALES are a vibrant, instantly eye-catching twist on the savory tamale featuring a colorful blueberry masa dough wrapped around a cream cheese filling. Ҝ

THE BLUE BOOST: BLUEBERRY JUICE CONCENTRATE AND STRAINED, CANNED BLUEBERRIES PAIR UP TO BRING INTENSE COLOR CONCENTRATION AND BITS OF TENDER, JUICY BERRY TEXTURE TO THE DOUGH.

Frozen tamale sales have exhibited an 11[%] CAGR over the past three years (to reach \$35.9^{MM} in sales in 2020) as a convenient, portable, ethnic option¹⁰

DRIED BLUEBERRY, ALMOND & CAPERBERRY **COUSCOUS** is a modern flavor marvel serving up a combination of spiced, tangy, and fresh herb taste, all with the convenience of a heat-and-eat meal or quick-prep side dish.

THE BLUE BOOST: FREEZE-DRIED BLUEBERRIES ARE THE PERFECT FORMAT FOR THIS SHELF-STABLE DRIED MEAL CUP, PERFECTLY REHYDRATING INTO PLUMP, SWEET-TART BURSTS OF FLAVOR TO BALANCE THE SAVORY MIX.

VISIT FOODPROFESSIONALS.BLUEBERRY.ORG/ FOR-FOOD-MANUFACTURING FOR THESE **COMPLETE FORMULATIONS AND EVEN** MORE BLUEBERRY INSPIRATION.

9. U.S. Highbush Blueberry Council 2017 Consumer Attitudes & Usage Study 10. Nielsen POS Sales Data, CY2017–2020. Nielsen Proxy Sales Comparison Report July 2021

Prepared Foods, cont.

TURKEY & BLUEBERRY PROTEIN BITES WITH BLUEBERRY

TERIYAKI is a match made in modern snacking heaven offering bites of lean protein with bursts of juicy flavor, plus a dipping sauce that swaps refined sugar for natural fruity sweetness.

THE BLUE BOOST: REHYDRATED DRIED BLUEBERRIES ADD A WELCOME BURST OF TEXTURE AND STRONG NATURAL PRODUCT ID TO ANY EMULSIFIED MEAT PRODUCT, WHILE BLUEBERRY JUICE CONCENTRATE PROVIDES VIBRANCE AND NATURAL SWEETNESS IN A TRADITIONALLY BROWN SAUCE THAT'S VERSATILE ENOUGH TO BE USED ACROSS COUNTLESS APPLICATIONS.

Teriyaki sauce sales saw impressive 25[%] category growth to ^{\$}115.9^{MM} in sales in 2020. Consumers love easy ethnic additions, even at home!⁰

65% of consumers perceive menu items or snacks with blueberries as healthier or better for them than those without? so what better way to satisfy savvy snackers than with a treat that pairs lean, clean protein with the added health and flavor benefits of blueberries?

MAKE IT

Make the protein bites. Soak 30 grams panko breadcrumbs in 52.5 grams milk, then squeeze out the excess liquid. Combine in a large bowl with 225 grams ground turkey thighs, 25 grams egg, 1.35 grams fine sea salt, 0.4 gram onion powder, 0.3 gram garlic powder, and 0.1 gram black pepper. Fold in 40 grams rehydrated dried blueberries, and form mixture into 30-gram balls. Chill for 1 hour, then pan fry in canola oil for 3 minutes until lightly golden. Finish in a 350°F oven for 10 minutes until internal temperature is 165°F. (Yield: approx. 24 3-bite servings)

Make the teriyaki sauce. In a large, heavy saucepan, combine 1,200 grams tamari, 720 grams mirin, 540 grams blueberry juice concentrate, 264 grams maple syrup, and 18 grams grated fresh ginger. Bring to a gentle simmer. In a small bowl, mix 120 grams cornstarch with 36 grams water to form a slurry. Whisk into sauce until smooth, and simmer 3-5 minutes until thick. Cool completely to serve. (Yield: approx. 24 4-ounce servings)

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U.S. Highbush Blueberry Council 2017 Consumer Attitudes & Usage Study.
Nielsen POS Sales Data, CY2017-2020. Nielsen Proxy Sales Comparison Report, July 202



TURKEY & BLUEBERRY PROTEIN BITES WITH BLUEBERRY TERIYAKI

Nutrition	Facts
TBD servings per con	tainer
	6 meatballs
Amount per serving	00
Calories	90
	% Daily Value*
Total Fat 5g	6%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 20mg	7%
Sodium 70mg	3%
Total Carbohydrate 5g	2%
Dietary Fiber 1g	4%
Total Sugars 2g	
Includes 0g Added Su	igars 0%
Protein 5g	
Vitamin D 0mcg	0%
Calcium 13mg	2%
Iron 1mg	6%
Potassium 84mg	2%
*The % Daily Value tells you how mu serving of food contributes to a daily day is used for general nutrition advi	diet. 2,000 calories a

Bold Blueberry Beverages to Boost Your Bottom Line

Develop the vibrant, functional sips your consumers crave with the bottom-line-boosting benefits that only blueberries can provide.

BLUEBERRY SUPERFOOD SMOOTHIE CUBES pack all of the functional power of a loaded blueberry smoothie into an easy blend-and-drink format that delivers protein, omega-3s, and antioxidants. 💹

THE BLUE BOOST: BLUEBERRY PURÉE IS A NATURAL FIT AS THE CORE INGREDIENT, MAKING UP OVER 30% OF THE FORMULA WITH ITS SUPERFOOD CREDIBILITY AND BELOVED FLAVOR.

MAKE IT

These are a perfect 1-2 punch in terms of delivering on consumer demands for convenience as well as nutrition, especially since 83% of blueberry consumers consider blueberries a better source of antioxidants compared to other fruits!⁸ You can add your choice of additional powerhouse ingredients knowing you'll achieve a flavorful and nutritious mixture, or try our favorite combination below:

In a high-powered blender, combine 2,700 grams blueberry purée, 564 grams banana, 390 grams pitted dates, 120 grams each fresh turmeric, hemp hearts, whole raw almonds, 54 grams MCT oil, 42 grams super green nutrition powder, 3 grams liquid stevia, and 1.2 grams black pepper. When fully combined, blend in 120 grams chia seed until just combined. Deposit 25 grams of purée into 1.75" square silicone molds and freeze at least 2 hours. To build smoothie, place 6 frozen cubes in a blender with 7 ounces milk or milk alternative and blend until combined. Makes a 12-ounce beverage. (Yield: 144 cubes or 24 servings)

The kombucha category has shown strong and consistent growth of nearly 15⁷⁰ CAGR over the past three years to $^{603.5}$ in sales in 2020.¹⁰

BLUEBERRY KALM KOMBUCHA is a modern-day thirst quencher that delivers refreshing flavor, beautiful color, and powerful health functionalities all in one sip. As perfect for a summer day cooler as it is for a year-round mocktail choice.

THE BLUE BOOST: BLUEBERRY JUICE CONCENTRATE ADDS A NATURAL SWEETNESS TO BALANCE THE TART KOMBUCHA, AND IT ADDS SOUGHT-AFTER ANTIOXIDANTS TO COMPLEMENT THE IMMUNE-BOOSTING BENEFITS KOMBUCHA IS OFTEN RECOGNIZED FOR.

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ustomer Driven Segmentation Study, April 2019. 3 Sales Data, CY2017–2020. Nielsen Proxu Sales Comparison Report, July 2021.





JEBERRY SUPER

Nutritio	n Facts
Serving size	4 cubes (100g)
-	plus 1/2 cup
	(121g) soy milk
Amount per serving	010
Calories	210
	% Daily Value*
Total Fat 8g	10%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol Omg	0%
Sodium 70mg	3%
Total Carbohydrate	31g 11%
Dietary Fiber 4g	14%
Total Sugars 21g	
Includes 0g Add	ed Sugars 0%
Protein 7g	
Vitamin D 0mcg	0%
Calcium 77mg	6%
Iron 3mg	15%
Potassium 464mg	10%
*The % Daily Value tells you serving of food contributes to	a daily diet. 2,000 calories a



Sweet Roll Dough, though an established product with \$423.6^{MM} in sales, experienced 23[%] growth in 2020.¹⁰

Next-Gen Bakery and Confections with Modern Crave Appeal

Baked goods and treats made with blueberries are a perennial favorite, and our new innovations that pair bold flavors with blueberries' health halo will drive demand with today's most savvy eaters.

BLUEBERRY ALLSPICE ROLLS turn the classic cinnamon roll into a contemporary star, utilizing a blueberry compote in lieu of a cinnamon sugar filling to boost the color and health appeal of this ready-to-cook retail staple.

THE BLUE BOOST: A COMBINATION OF DRIED AND CANNED BLUEBERRIES CREATES A FLAVORFUL AND MORE COMPOTE-LIKE FILLING WITH A STRUCTURE AND TEXTURE IDEAL FOR COMMERCIAL APPLICATIONS.

VISIT FOODPROFESSIONALS.BLUEBERRY.ORG/ FOR-FOOD-MANUFACTURING FOR THESE COMPLETE FORMULATIONS AND EVEN MORE BLUEBERRY INSPIRATION.

Bakery and Confections, cont.

BLUEBERRY COLLAGEN DARK CHOCOLATE CHEWS are so chewy and decadent, consumers will delight

in knowing they can both satisfy a sweet tooth and get a brain, beauty, and body boost to boot. 测

THE BLUE BOOST: IT'S TRIPLE THE BLUE, WITH A COMBINATION OF DRIED AND FREEZE-DRIED BLUEBERRIES TO BRING BALANCED FLAVOR AND TEXTURAL VARIETY TO THE CHEW, WHILE BLUEBERRY POWDER COATS THE EXTERIOR FOR FUNCTIONAL VIBRANCY.

FROM THE BENCH

Even though the freeze-dried blueberries provided a great textural crunch, the base just wasn't chewy enough. Through the development process, we found that adding dried blueberries instead of more caramel provided the excellent, stickysweet chew we were missing without further added sugars.

CULINEX PRODUCT DEVELOPMENT

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BLUEBERRY COLLAGE DARK CHOCOLAT

Nutritio	n Facts
TBD servings per Serving size	container 2 pieces (34g)
Amount per serving Calories	150
	% Daily Value*
Total Fat 8g	10%
Saturated Fat 5g	25%
Trans Fat 0g	
Cholesterol 15mg	5%
Sodium 10mg	0%
Total Carbohydrate	19g 7%
Dietary Fiber 1g	4%
Total Sugars 17g	
Includes 15g Add	led Sugars 30%
Protein 3g	
Vitamin D 0mcg	0%
Calcium 21mg	2%
Iron 1mg	6%
Potassium 83mg	2%
*The % Daily Value tells you h serving of food contributes to day is used for general nutritic	a daily diet. 2,000 calories a



FROM THE BI

Blueberries turned out to be such a versatile ingredient for creating a range of flavored butter spreads. The freeze-dried and powdered blueberries created the perfect base that unlocked the possibility for both sweet and savory combinations, which then opened up so many more possibilities for use in development or service.

CHEF ROSALYN DARLING, PRODUCT DEVELOPMENT

Sauces and Dips Add Vibrant Value Across **Product Categories**

Jams and jellies are only the beginning. With a naturally sweet-tart flavor profile, blueberries are your secret weapon for sauces, spreads, and dips that add value and drive demand across product categories.

baked goods. Ҝ

THE BLUE BOOST: CANNED, DRAINED BLUEBERRIES PLUS A SPLASH OF BLUEBERRY JUICE CONCENTRATE CREATE A VIBRANT YET BALANCED BASE HUMMUS THAT COULD LEAN SWEET OR SAVORY IN FINAL FORMULATION.

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The Traditional Butter category has had steady growth in recent years and skyrocketed **23**[%] in 2020 to **\$3,811.9^{MM}** in sales¹⁰

BLUEBERRY COMPOUND BUTTERS make butter the star of any dish or occasion, whether a breakfast spread, savory finishing flavor for protein or veggies, hot beverage infusion, or ingredient in

THE BLUE BOOST: CHOPPED, FREEZE-DRIED BLUEBERRIES AND BLUEBERRY POWDER ARE KEY TO ACHIEVING VIBRANT COLOR AND FLAVOR WITHOUT ANY STREAKING, VEINING, OR SEPARATION.

BLUEBERRY BALSAMIC RICOTTA SPREAD takes the classic fruit and cheese pairing to new heights using a bright blueberry compote to enhance the rich creaminess of ricotta.

THE BLUE BOOST: IQF BLUEBERRIES FEATURE NO ADDITIONAL ADDED SWEETNESS, JUST THE TENDER, LIGHTLY SWEET-TART BURST NEEDED TO PAIR WITH THIS VIBRANT, SAVORY DIP.

BLUEBERRY & PRESERVED LEMON HUMMUS brings fresh vibrance to a traditionally beige category and amplifies the plant-based protein and fiber-rich base with the health credentials of blueberries.

Consumer Perceptions of Blueberries

INSIGHTSNOW (INI) IS A CONSUMER RESEARCH GROUP that

focuses on researching how consumers perceive ingredients and their benefits. Leveraging their patent-pending Implicit/Explicit Test™ which is a timed survey that takes into account both the consumers' answers and how fast they answer, we can see how blueberries score in the minds of consumers—conscious and subconscious. The value created is called the Benefit Association Score™ The higher the score the more consumers associate an ingredient with a certain benefit or claim.

INI's database shows that blueberries outperform other fruits in consumer perception of health benefits. While fruits generally score well in all categories, blueberries were in the top group for every single category.

Some categories offer a clearer view of blueberries' superior rating in consumer perception over other fruits. Consumers scored blueberries with a 66.25 in increased energy. Consumers perceive blueberries to be better for increasing energy than cherries (42.75) and dates (41.25). Dates are a typical main ingredient in fruit-based energy bars. This shows that there is an opportunity to substitute dates with blueberries in energy bars to increase the associated benefits of energy and increase the perceived benefits of the product.

Blueberries (87.75) score much higher than lemon (46.57), goji berries (54.90), orange (53.92), cherries (57.84), and raisins (51.96) in the promotes heart health section. Blueberries not only provide studied and proven health benefits, but consumers also associate blueberries with these benefits. This will cut down on the consumer education that needs to be done for new products and can inform product developers and marketers on how to design and develop products that nudge and disrupt consumer behaviors.

81.52 helps support general overall health

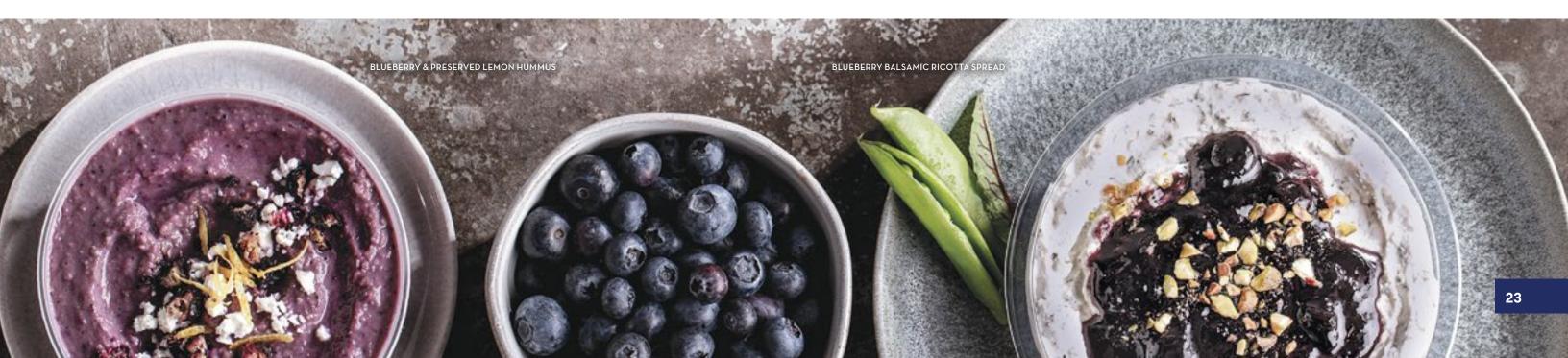
80.98 helps support physical/athletic performance

Blueberries' InsightsNow Benefit Association Scores™

	IMPROVES BRAIN FUNCTION AND MEMORY	INCREASES ENERGY	PROMOTES HEART HEALTH	PROVIDES IMMUNE SUPPORT	PROVIDES WEIGHT MANAGEMENT	HELPS SUPPORT GENERAL OVERALL HEALTH	HELPS SUPPORT PHYSICAL/ ATHLETIC PERFORMANCE	HELPS SUPPORT RELAXATION	HELPS SUPPORT SLEEP	HELPS SUPPORT STRESS MANAGEMENT
BLUEBERRIES	79.8	66.25	87.75	84.69	79.13	81.52	80.98	57.25	44.79	73.53
LEMON	43.37	49	46.57	78.57	75.24	67.39	67.93	52	42.19	61.76
GOJI BERRY	64.8	62.25	54.9	68.88	54.89	64.67	64.13	43.25	44.27	60.78
ORANGE	51.02	50.25	53.92	71.35	62.5	65.76	65.22	45.25	21.35	62.25
ACAI	66.33	56.25	61.27	70.92	59.24	63.04	63.04	47.75	31.25	59.8
CHERRY	61.73	42.75	57.84	64.29	57.07	69.57	69.57	41.25	40.62	61.76
RAISINS	57.14	48.75	51.96	59.18	47.28	67.39	68.48	36	25.52	53.43
DATES	49.94	41.25	47.55	54.08	46.74	63.04	63.59	35.5	20.31	55.88
LIME	41.33	35.75	41.67	69.39	55.98	55.98	57.07	42	21.35	52.45
MEAN	62.11	56.21	63.48	71.17	65.87	69.53	69.5	46.59	34.96	63.42
SAMPLE SIZE	49-77	100-193	51-138	49-191	46-83	46	46	100	48	51
P-VALUE	<.0001	<.0001	<.0001	<.0001	<.0001	.0541	.0837	<.0001	.0003	.0362

Interpretation of Implicit/Explicit Test[™] Scores

100					
95					
90	STRONG POSITIVE CONNECTION: INGREDIENT S				
85	A POSITIVE ASSOCIATION. The majority of people associate this ingredient as supporting this benefit.				
80	associate this ingredient as sopporting this benefit.				
75					
70					
65	POSITIVE CONNECTION: ATTRIBUTE SCORE O				
60	ASSOCIATIONS THAN NEGATIVE. The majority of and the benefit. There are more explicit responses or				
55					
50					
45					
40	NEGATIVE CONNECTION: ATTRIBUTE SCORE (
35	ASSOCIATIONS THAN POSITIVE. The majority of				
30	and the benefit. There are more explicit responses o				
25					
20					
15	STRONG NEGATIVE CONNECTION: ATTRIBUTE SO ASSOCIATION. The majority of people have a fast in ingredient with this benefit.				
10					
5	, v				



CORE OF 75 OR HIGHER—A VAST MAJORITY HAD have a fast implicit positive response. People intuitively

50-74.9—THERE WERE MORE PEOPLE WITH POSITIVE people have a positive association between the ingredient more biomodality.

25-49.9—THERE WERE MORE PEOPLE WITH NEGATIVE people have a negative association between the ingredient more biomodality.

CORE LESS THAN 25—A VAST MAJORITY HAD A NEGATIVE mplicit negative response. People do not intuitively associate this





RESEARCH & TECHNICAL SUPPORT PRODUCT INNOVATION INDUSTRY TRENDS CONSUMER DATA & INSIGHTS SUPPLIER INFORMATION AT USHBC, WE ARE INSPIRED EVERY DAY BY THE POSSIBILITIES that blueberries present for versatile, valuable, and wholesome product development. We bring together data, insights, community, and resources to inform and inspire high-impact product development that will generate interest, drive demand, and boost sales.

Visit our Food Manufacturing Hub at <u>foodprofessionals.blueberry.org/for-food-manufacturing</u>, a resource for the latest information and inspiration in blueberry processing, or reach out to our team directly to find out how we can support your product development efforts with a custom partnership.