


COMPLIMENTARY WEBINAR PRESENTATION | EARN 1 CEU FREE


Power Snacking

Increase Overall Nutrition with Blueberries

PRESENTED BY
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Thursday, May 28 at 2 PM EDT

This activity is accredited through U.S. Highbush Blueberry Council. 



1

Agenda





- Blueberry Nutrition Research Areas
 - Cognition
 - Diabetes/Insulin Resistance
 - Cardiovascular Disease
- The Rise of Snacking
- Blueberries as a Solution for Healthy Snacking
- Resources
- Q&A




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2

Learning Objectives

-  Understand current and emerging health research related to blueberries and certain health conditions
-  Develop an understanding for the latest data related to the increase in trends of snacking in the United States
-  Provide recommendations on blueberry consumption for clients and/or patients
-  Apply the latest trends in snacking to incorporate blueberries into menus and eating plans

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3

Disclosures

- This webinar is sponsored by the U.S. Highbush Blueberry Council
- Leslie Wada, Ph.D., R.D. is the Research Administrator at the U.S. Highbush Blueberry Council
- Mary Ellen Phipps, M.P.H., R.D.N., L.D. is a paid spokesperson for the U.S. Highbush Blueberry Council

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4

We Want to Hear From You

#TheBlueberryMethod



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5

Blueberry Nutrition Research



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6



7

U.S. Highbush Blueberry Council Nutrition Research Program

Know we're always learning more.
Blueberries may promote good health in additional ways. Areas of research:

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8

Landmark Studies on Blueberries

- Blueberries put on the map with high ORAC value
- Early studies on age-related decline of brain function

Antioxidant Capacity As Influenced by Total Phenolic and Anthocyanin Content, Maturity, and Variety of *Vaccinium* Species

ABSTRACT: Different cultivars of four *Vaccinium* species [*Vaccinium corymbosum* L. (Highbush), *Vaccinium angustifolium* (Rabbiteye), *Vaccinium myrtillus* L. (Bilberry)] were analyzed for total phenolics, total anthocyanins, and...

Reversals of Age-Related Declines in Neuronal Signal Transduction, Cognitive, and Motor Behavioral Deficits with Blueberry, Spinach, or Strawberry Dietary Supplementation

ABSTRACT: A primate research indicates that age-related neuronal-behavioral decrements are the result of oxidative stress that may be ameliorated by antioxidants. The present study had shown that rats given dietary supplements of fruit and vegetable extracts with high...

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9

Blueberries' Potential Impact on Cognition

- Older subjects that already showed signs of cognitive impairment
- Blueberry group exhibited improved areas of cognition after 16 weeks
- Semantic access and visual-spatial memory and a trend for enhanced speed of processing

Paired Associate Learning Score

Group	Score
Blueberry	~2.8*
Placebo	~1.5

Semantic Access Score

Group	Score
Blueberry	~17*
Placebo	~14

Cherrier B, Kraljic M, Hildebrandt SE, Shulman MG, Summer SS, Stein HC. Cognitive performance in older adults after 16 weeks of daily blueberry supplementation. *Journal of Functional Foods*. 2020;64:103657.

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10

Blueberries' Potential Impact on Cognition

- Healthy subjects, 13 men and 24 women, between the ages of 60 and 75, randomly selected to receive a diet supplemented daily with blueberries or a placebo for 90 days
- Blueberry-supplemented group showed significantly fewer errors compared to the placebo group in tests used to assess verbal memory and task switching

Repetition Errors (#)

Group	0 Days	90 Days
Placebo	~8	~10
Blueberry	~10	~6

Miller MG, Hamilton DA, Joseph JA, Shukla-Nigam R. Greater blueberry response to cognitive aging in older adults in a randomized, double-blind, placebo-controlled trial. *Diabetes*. 2010;59(11):1107-1110.

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11

Blueberries' Potential Impact on Diabetes/Insulin Response

- Daily dietary supplementation of bioactives in blueberries improved insulin sensitivity over 6 weeks in obese, nondiabetic, and insulin-resistant participants
- Results shown by using a high-dose hyperinsulinemic-euglycemic clamp

Δ Insulin Sensitivity, mg·kg⁻¹·FM⁻¹·min⁻¹

Group	Δ Insulin Sensitivity
Blueberry	~1.7
Placebo	~0.5

$P = 0.04$

Gholi AI, et al. Bioactives in blueberries improve insulin sensitivity in obese, nondiabetic men and women. *Diabetes*. 2010;59(11):1764-1769.

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Blueberries' Potential Impact on Diabetes/Insulin Response

- Intake of blueberries resulted in clinically significant improvements in measurable indicators of type 2 diabetes in overweight men compared to placebo
- Improvements shown in Hemoglobin A1c (HbA1c) and fructosamine compared to a placebo

Variable	Blueberry		Placebo		P-value
	Baseline	8 weeks	Baseline	8 weeks	
Total cholesterol (mg/dl)	161.4 ± 9.6	155.9 ± 1.8	166.4 ± 0.6	162.2 ± 7.3	0.51
LDL cholesterol (mg/dl)	82.5 ± 7.8	81.2 ± 5.0	87.2 ± 4.4	83.2 ± 5.6	0.93
HDL cholesterol (mg/dl)	44.2 ± 1.9	42.1 ± 1.2	46.6 ± 2.6	44.1 ± 2.2	0.26
Triglycerides (mg/dl)	136.3 ± 24.6	179.9 ± 20.1	176.4 ± 15.3	199.6 ± 29.9	0.03
C-reactive protein (mg/dl)	0.57 ± 0.11	0.57 ± 0.11	0.51 ± 0.11	0.50 ± 0.11	0.99
Glucose (mg/dl)	148.4 ± 4.3	146.2 ± 5.4	153.8 ± 2.7	153.2 ± 20.2	0.54
Insulin (µU/mL)	17.5 ± 1.4	16.8 ± 2.3	13.4 ± 2.1	13.2 ± 4.4	0.48
Hemoglobin A1c (%)	7.2 ± 0.2	7.1 ± 0.1	7.5 ± 0.2	7.5 ± 0.2	0.03
Fructosamine (µmol/L)	290.5 ± 5.7	275.5 ± 4.1	285.5 ± 9.2	292.4 ± 7.9	0.04

↓ Fructosamine ↓ Triglycerides ↓ Hemoglobin A1c (%)

Stable AS, et al. Effect of Blueberry Consumption on Cardiovascular Health Parameters in Men with Type 2 Diabetes. In: *Diabetes, Obesity and Metabolism: Pathophysiology, Clinical and Therapeutic Advances*. Elsevier; 2019. p. 100-105.

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13



Blueberries' Potential Impact on Cardiovascular Health

- Postmenopausal women with pre- and stage 1 hypertension who consumed blueberries experienced 5.1% and 6.3% reductions in mean systolic blood pressure and diastolic blood pressure
- Significant (P<0.01) reduction in Brachial-ankle pulse wave velocity

Variable	Blueberry			Control		
	Baseline	4 weeks	8 weeks	Baseline	4 weeks	8 weeks
Systolic blood pressure (mm Hg)	138 ± 14	135 ± 15	131 ± 17*	138 ± 15	136 ± 15	139 ± 15
Diastolic blood pressure (mm Hg)	85 ± 7	77 ± 10	75 ± 10*	78 ± 8	78 ± 11	80 ± 8
Mean arterial pressure (mm Hg)	93 ± 9	91 ± 11	90 ± 11	98 ± 9	97 ± 11	97 ± 11
Carotid femoral pulse wave velocity (cm/sec)	1,234 ± 201	1,269 ± 225	1,258 ± 214	1,233 ± 238	1,241 ± 216	1,256 ± 229
Brachial ankle pulse wave velocity (cm/sec)	1,488 ± 179	1,466 ± 203	1,401 ± 122**	1,470 ± 184	1,464 ± 174	1,477 ± 175
Heart rate (beats/min)	65 ± 10	66 ± 9	65 ± 9	66 ± 7	66 ± 6	65 ± 6

*P<0.05 for groupwise interaction in comparison with baseline.
**P<0.01 for within-group differences in comparison with baseline.

Johnson SA, et al. Daily Blueberry Consumption Improves Blood Pressure and Arterial Stiffness in Postmenopausal Women with Pre- and Stage 1 Hypertension: A Randomized, Double-Blind, Placebo-Controlled Clinical Trial. *J Acad Nutr Diet*. 2015;15(12):169-77.

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14



Blueberries' Potential Impact on Cardiovascular Health

- Men and women with metabolic syndrome who consumed blueberries resulted in clinically significant improvements in heart health measures, particularly markers of vascular function

Vascular Function

Full dose (1 US cup)
Half dose (1/2 US cup)
Placebo

Curtis PJ, et al. Blueberries Improve Biomarkers of Cardiovascular Function in Participants with Metabolic Syndrome - Results from a 5-month, Double-Blind, Randomized, Controlled Trial. *Am J Clin Nutr*. 2019;109(1):157S-159S.

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15




What's Next?

Know we're always learning more.
Blueberries may promote good health in additional ways. Areas of research:

- Cardiovascular Health
- Brain Health
- Exercise
- Insulin Response
- Gut Health

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16

The Rise of Snacking

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17



18

Snacks, Mini-Meals/Snack Meals...They Fit Within Our Culture

- 47% of consumers eat 3+ snacks per day
- 73% are looking for snacks that provide sustenance
- 64% look to snacks to provide an energy boost
- 66% are looking for snacking to fuel their day; up 11 points from 2015



[R] - How America Eats 2019: The State of the Snacking Industry

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19

Snacks, Mini-Meals/Snack Meals ... They Fit Within Nutrition Policy

1/2 Adolescent females and young adult males consume three meals a day, but most also have two or more snacks per day

40-50% Consume two to three snacks a day, and about one-third consume four or more snacks a day, among most age groups

DIETARY GUIDELINES FOR AMERICANS 2015-2020 EIGHTH EDITION

U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 Dietary Guidelines for Americans, 8th Edition.

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20

Online Searches: Snacking/Snacks Dominate

Most popular search keywords related to "snacks"



- Keyword number 1 - healthy snacks
- Keyword number 2 - kids snacks
- Keyword number 3 - snacks recipes
- Keyword number 4 - snack
- Keyword number 5 - snacks for kids
- Keyword number 6 - best snacks
- Keyword number 7 - fruit snacks
- Keyword number 8 - good snacks
- Keyword number 9 - easy snacks
- Keyword number 10 - party snacks
- Keyword number 11 - protein snacks
- Keyword number 12 - low carb snacks
- Keyword number 13 - diet snacks
- Keyword number 14 - healthy kids snacks
- Keyword number 15 - low calorie snacks
- Keyword number 16 - healthy recipes
- Keyword number 17 - healthy snacks for kids
- Keyword number 18 - quick snacks
- Keyword number 19 - high protein snacks
- Keyword number 20 - Halloween snacks
- Keyword number 21 - healthy snack
- Keyword number 22 - gluten-free snacks
- Keyword number 23 - breakfast snacks
- Keyword number 24 - Indian snacks
- Keyword number 25 - fun snacks


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21

Snacks Can Help Boost Nutrition

Kids Snacking between meals improves overall diet quality of a racially diverse set of children, and an important source of fruit and dairy for kids

Adults The percentage of snacking calories from nuts, fruit and 100-percent fruit juice was related to better diet quality



1. Luth KA, Tate A, Trofholz A, Fisher JO, Neumark-Sztainer D, Bauer DC. The contribution of snacking to overall diet intake among an ethnically and racially diverse set of young adults. *J Acad Nutr Diet.* 2020;20(12):2177-2184.

2. Reeves T, French SA, Harwick L, Michael ML, Reijnen J. Snacking patterns, diet quality and body mass index: a cross-sectional study of working adults. *J Acad Nutr Diet.* 2016;16(7):1147-55.

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22

Blueberries as a Solution for Healthy Snacking

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23



QUICK SURVEY

24

Good Things Come in Small Packages

Highbush blueberries are certified by the American Heart Association

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25

Good Things Come in Small Packages

Get 4 essential nutrients

- Fiber** – Heart health, feeling full, staying regular, keeping cholesterol in check
- Vitamin C** – A healthy immune system
- Vitamin K** – Bone metabolism, regulating blood clotting
- Manganese** – Converting proteins, carbs, and fats into energy, bone development

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26

Real Food For Real Life

- Busy families want healthy, sustained energy in a portable format
- An abundance of “healthy” snacking products have rushed in, leaving people unsure what to believe and seeking products they can trust
- Blueberries can add nutrients to hurried food occasions that busy families experience day after day after day
- They are loved: 80% of say blueberries remind them of summer and 57% have pleasant memories of eating blueberries as a child

2019 U.S. Highbush Blueberry Council Registration Study

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27

Consider the Pair

- A great snack involves protein and complex carbs
- Blueberries provide complex carbs in the form of fiber
- Great pairing ideas for blueberries include:
 - Nuts
 - Nut butter
 - Cheese
 - Seeds
 - Hummus
 - Hard boiled eggs
 - Yogurt

Hugheslin C, Vogt JA, Weaver TG. The effects of fat and protein on glucose response to breakfast. *Diabetes Care* 1996; 19(12):1255-1259.

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28

Sweet Loves Savory


Flavor Pairings Are Endless

- Lemon; Mint; Rosemary; Coconut; Balsamic; Cheese: Goat, Feta, Ricotta; Olives; Basil



<https://www.blueberryresearch.org/blueberry-cooking-idea/flavor-pairings/>

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29

Bento Box and Tins

People Love Bento Boxes

- Ease of use, Kid friendly, Controlled portions, Endless option



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30

Bowls and Smoothies

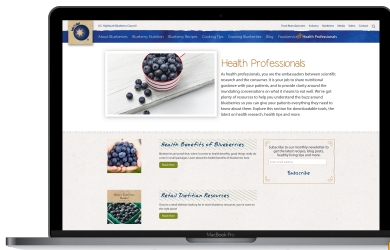


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31

Resources



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32

Resources



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33

Resources

@milkandhoneynutrition

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34

Questions?

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35

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36
