

Development of Value-Added Food Products From Barley

Agriculture Research Foundation

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Sarah Masoni, PI
Michael Morrissey, PI
Patrick Hayes, co-PI
Andrew Ross, co-PI

Product development of barley based foods to expand the use of a nutritional, flavorful, but underutilized ingredient was conducted for Oregon State University by the Food Innovation Center. Granola (savory and sweet varieties), health bar, scone topping, cookies, muffins, bars, and commercial scone mix formula recipes were developed working with Chef Jaime and his team, in University Housing and Dining Services at West Hall. The Streaker Barley Scones are made and sold in the café in West Dining Hall. Report and results have been shared with University Dining Services, College of Ag Marketing, and the Oregon Farm to School Program.

***Food Innovation Center
OSU Barley Project***

Date: June 14, 2016

Summary:

Product development of barley based foods to expand the use of a nutritional, flavorful, but underutilized ingredient was conducted for Oregon State University by the Food Innovation Center. Granola (savory and sweet varieties), health bar, scone topping, cookies, muffins, bars, and commercial scone mix formula recipes were developed working with Chef Jaime and his team, in University Housing and Dining Services at West Hall. The Streaker Barley Scones are made and sold in the café in West Dining Hall. Report and results have been shared with University Dining Services, College of Ag Marketing, and the Oregon Farm to School Program

Objectives:

- Develop three (3) new value-added food products using barley as the main ingredient.
- Convert existing recipes of barley foods into standardized formats and ensure that these recipes are widely available.
- Provide information of product formulation and results for commercialization of products for
 - a) entrepreneurs,
 - b) farm-to-school program,
 - c) OSU branded products program (e.g. Beaver Classic Cheese).

Process:

- Granolas
 - Modified a standard recipe for granola made with oats to include rolled barley
- Scone Mix and Scone Topping
 - OSU uses a standard large batch scone mix; developed a crumble topping made from barley ingredients to press on top before baking, making the scone tastier, and more like a homemade baked good.
 - Scone mix adapted from OSU Housing and Dining Services
- Health bar/muffin
 - Modified “no bake” and health cookie recipes using barley and other OSU promoted ingredients (blueberries etc...) to create a nutritional option that is also high in flavor.
- Cookies
 - Modified standard chocolate chip and oatmeal cookie recipes to include barley ingredients.

Results:

- Recipes
- Photos
- Nutritional information
- Formulas

- Dry Mix Packaging Recommendations

***Savory Curry Granola* – Adapted from “Cookbooks 365” blog**

<http://www.cookbooks365.com/curry-cashew-savory-granola/>

- 2 tablespoons (14 g) ground flaxseed mixed with 4 tablespoons (59 ml) warm water
- 1 cup (92 g) rolled barley
- 3 tablespoons (45 ml) olive oil OR with 1 tablespoon [15 g] ground flaxseed mixed with 2 tablespoons [30 ml] warm water
- 1/3 cup (26 g) finely shredded coconut
- 1/3 cup (43 g) nuts of your choosing, crushed
- 1 1/2 teaspoon yellow curry powder
- 1/2 teaspoon cumin
- 1/4 teaspoon granulated garlic
- 1 teaspoon chili powder
- 1/2 teaspoon red chili flakes
- 1/4 teaspoon ground coriander
- 1/2 teaspoon ground mustard powder
- 3/4 teaspoon salt
- 2 tsp coconut sugar
- 1/3 cup (55 g) dried currants

- Preheat oven to 350F and either oil a cookie sheet or line it with parchment paper. Add all ingredients but the currants in a medium-sized mixing bowl and mix well. Pour the mixture onto the prepared cookie sheet and press thin. Bake for 20 to 30 minutes, until the edges are browned and the middle is no longer wet. Be sure rotate the pan every 10 minutes or so to ensure even color and baking.

- Let cool on cookie sheet and break it up into large or small chunks with your hands, stirring in the currants as you do so. Use to top salads or plain yogurt, or just eat by the handful for a snack.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
barley, rolled, dry, flakes	1	Cup	30.774611	88
currants, dried	0.33	Cup	16.786151	48
pecans, halves	43	Gram	15.037594	43
oil, vegetable, low saturated fat	3	Tablespoon	14.268229	40.8
coconut, fresh, shredded	26	Gram	9.092499	26
flax seed meal, ground	2	Tablespoon	4.546249	13
sugar, coconut palm, granulated	2	Teaspoon	3.497115	10
chili peppers, powder	2	Teaspoon	1.888442	5.4
sea salt	0.75	Teaspoon	1.573702	4.5
spice blend, curry, powder	1.5	Teaspoon	1.049134	3
mustard seed, ground	0.5	Teaspoon	0.524567	1.5
chili peppers, red, crushed flakes	0.5	Teaspoon	0.31474	0.9
cumin seed, ground	0.5	Teaspoon	0.279769	0.8

Spice, garlic, granulated, dried	0.25	Teaspoon	0.244798	0.7
coriander seed, ground	0.25	Teaspoon	0.122399	0.35



Nutrition Facts	
Serving Size 2.5 oz (71g)	
Servings Per Container about 4	
Amount Per Serving	
Calories 330	Calories from Fat 200
% Daily Value*	
Total Fat 22g	34%
Saturated Fat 3.5g	18%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 470mg	20%
Total Carbohydrate 34g	11%
Dietary Fiber 7g	28%
Sugars 11g	
Protein 6g	
Vitamin A 10%	• Vitamin C 2%
Calcium 4%	• Iron 15%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Barley Project Curry Granola

Barley Flakes, Dried Currants, Pecans,
Vegetable Oil, Coconut, Flax Seed Meal,
Coconut Sugar, Chili Powder, Salt, Curry
Powder, Mustard Seeds, Chili Pepper, Cumin,
Garlic, Ground Coriander Seeds.

Contains: Tree Nuts, Barley.

Protein: good source of protein

Dietary Fiber: high dietary fiber

Vitamin A - IU: good source of vitamin A

Basic Barley Granola Recipe (+Lemon) – Adapted from Chow.com

<http://www.chow.com/recipes/30062-basic-granola>

3 C rolled barley flakes (or 2 ¼ c barley flakes with ¾ c old fashioned oats)

3 Tbl brown sugar

½ tsp cinnamon

½ tsp salt

½ C nuts

1/3 C pear juice concentrate

¼ C + 2 Tbl flax seed meal mixed with ¾ C hot water (let sit 2 min)

¼ C canola oil

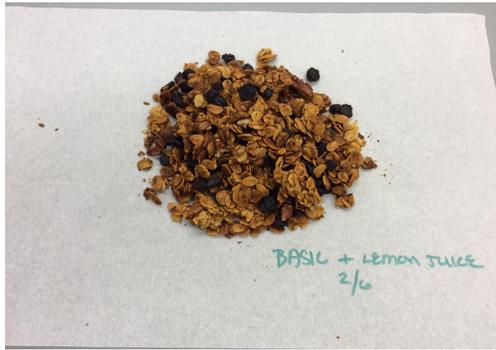
1 tsp vanilla extract

1 tsp lemon juice

½ C dried fruit

- Preheat oven to 300 degrees F. Prepare a sheet pan with a piece of parchment paper.
- Place barley, brown sugar, cinnamon, nuts, and salt in a bowl and stir to combine
- Place pear juice concentrate, flax seed paste, oil, and vanilla in a small bowl and stir to combine. Pour over the barley mixture and mix until the flakes are thoroughly coated.
- Spread evenly on the sheet pan, and press down slightly with your hands or a spatula.
- Bake for 15 minutes, then rotate the pan and give the barley a small stir. Return to the oven for an additional 10-15 minutes, or until the granola is golden brown.
- Remove the pan from the oven and cool on a wire rack for about 20-30 minutes before stirring in the dried fruit.
- Store in an airtight container.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
barley, rolled, dry, flakes	381.7	Gram	44.256612	381.7
honey, clover	104.33	Gram	12.096653	104.33
hazelnuts, dry roasted, unsalted	100	Gram	11.594606	100
Fruit, mixed, morsels, dried	78.74	Gram	9.129593	78.74
oil, coconut	74.96	Gram	8.691317	74.96
sunflower seeds, raw, shelled	68.95	Gram	7.994481	68.95
sugar, turbinado, natural, raw	46.69	Gram	5.413522	46.69
extract, vanilla	4.61	Gram	0.534511	4.61
salt, kosher, coarse	1.29	Gram	0.14957	1.29
cinnamon, ground	1.2	Gram	0.139135	1.2



Nutrition Facts	
Serving Size 4 oz (113g)	
Servings Per Container about 8	
Amount Per Serving	
Calories 380	Calories from Fat 140
% Daily Value*	
Total Fat 15g	23%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 180mg	8%
Total Carbohydrate 56g	19%
Dietary Fiber 9g	36%
Sugars 18g	
Protein 8g	
Vitamin A 0%	• Vitamin C 2%
Calcium 4%	• Iron 10%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories:	2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Barley Project Blueberry Hazelnut Granola

Ingredients: Barley Flakes, Water, Pear Juice Concentrate, Dried Blueberries, Hazelnuts, Vegetable Oil, Brown Sugar, Flax Seed Meal, Lemon Juice, Vanilla Extract, Salt, Ground Cinnamon.

03/09/2015

Contains: Tree Nuts

Saturated Fat: low saturated fat

Cholesterol: cholesterol free

Protein: good source of protein

Dietary Fiber: high dietary fiber

Chewy Chocolate Chip Barley Cookies

Adapted from blog: Dinner with Julie;

<http://dinnerwithjulie.com/2013/04/16/barley-chocolate-chip-cookies/>

¾ c unsalted butter

1 c brown sugar

¼ c granulated sugar

1 large egg

2 tsp vanilla

2 c barley flour

1 tsp baking soda

½ tsp salt

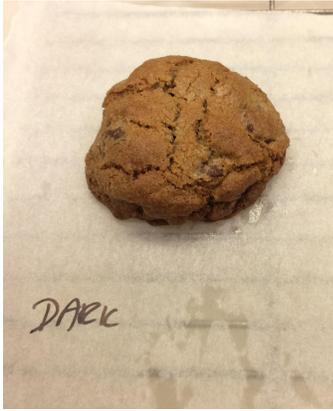
8 oz semi-sweet chocolate chips

- Preheat the oven to 350 degrees F
- Cream together the butter and both sugars. After scraping the sides of the bowl with a rubber spatula, beat in the egg and vanilla. Scrape the bowl again.
- Sift together the dry ingredients, and slowly incorporate into the wet ingredients
- Fold in chocolate chips
- Scoop cookies onto a baking sheet lined with parchment paper
(I used a #40 ice cream/cookie scoop).
And bake for about 8 minutes.
- Cool completely before enjoying.

Adaptations:

- Replace semi-sweet chips with dark chocolate chips/chunks. Reduce the amount by half as the dark chocolate will spread more during baking
- Replace chocolate with dried cranberries and orange zest
- For something like oatmeal cookies, stir in 2 cups of rolled barley before adding the chocolate or cranberries.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
barley flour	2	Cup	28.72682	296
Semi-Sweet Chocolate Chips	8	Ounce-weight	22.01059	226.796185
sugar, brown, packed	1	Cup	21.42864	220.799857
butter, unsalted	0.75	Cup	16.53732	170.399828
sugar, white, granulated	0.25	Cup	4.891321	50.399967
Egg, whole, raw, lrg	1	Each	4.852504	50
extract, vanilla	2	Teaspoon	0.815221	8.4
baking soda	1	Teaspoon	0.44643	4.6
sea salt	0.5	Teaspoon	0.29115	3



Nutrition Facts	
Serving Size 2 cookies (85g)	
Servings Per Container about 12	
Amount Per Serving	
Calories 380	Calories from Fat 150
% Daily Value*	
Total Fat 17g	26%
Saturated Fat 11g	55%
Trans Fat 0g	
Cholesterol 45mg	15%
Sodium 210mg	9%
Total Carbohydrate 53g	18%
Dietary Fiber 4g	16%
Sugars 32g	
Protein 4g	
Vitamin A 8%	• Vitamin C 0%
Calcium 2%	• Iron 10%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Barley Project Chocolate Chip Cookies

Ingredients: Barley Flour, Sugar, Semi-Sweet Chocolate Chips, Butter, Eggs, Vanilla Extract, Baking Soda, Salt.

03/09/2015

Contains Egg, Milk

Dietary Fiber: good source of dietary fiber

Healthy Barley Muffin

Adapted from 101 cookbooks blog post:

<http://www.101cookbooks.com/archives/nikkis-healthy-cookies-recipe.html>

½ c flax seed meal mixed with 1 c water to form paste

¾ c date paste

¾ c mashed ripened banana

1 tsp vanilla

¼ c vegetable or canola oil

¼ c sunflower seed butter or other nut butter

¼ c honey

2 c rolled barley

2/3 c barley flour

½ tsp cinnamon

½ tsp salt

1 tsp baking powder

3 oz each dried fruit and chopped nuts

- Preheat oven to 350 degrees F and prepare a standard or mini muffin tin either with paper liners or by coating with non-stick spray.
- Stir to combine flax seed paste, date paste, banana, vanilla, oil, nut butter, and honey in a small bowl
- In a separate medium or large bowl, combine the remaining ingredients.
- Thoroughly mix the wet ingredients with the dry, until everything is evenly coated and distributed.
- In a blender or food processor, blitz ½ of the batter for approximately 20 seconds, or until the mixture is smooth. Recombine this with the remaining ½ of unblended batter.
- Scoop the batter into your prepared muffin tins. Batter should fill the tin about ¾ of the way.
- Bake for 15-20 minutes, until the tops of the muffins bounce back when pressed, or a skewer comes out clean when inserted in the middle of the muffin.
- Makes approximately 36 mini muffins or 1 dozen standard.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
Dates, Deglet Noor, paste	0.75	Cup	21.40154	239.999757
barley, rolled, dry, flakes	2	Cup	15.69448	176
banana, fresh, mashed	0.75	Cup	15.04798	168.75
barley flour	0.33	Cup	8.798421	98.666667
blueberries, dried	3	Ounce-weight	7.584052	85.048569
hazelnuts, natural, whole	3	Ounce-weight	7.584052	85.048569
honey, extracted	0.25	Cup	7.49054	83.999915
sunflower seed butter	0.25	Cup	5.707078	63.999935
oil, vegetable, low saturated fat	0.25	Cup	4.851017	54.399945
flax seed meal, ground	0.5	Cup	4.637001	51.999947
baking powder, double acting	1	Teaspoon	0.445866	5
extract, vanilla	1	Teaspoon	0.374527	4.2
sea salt	0.5	Teaspoon	0.26752	3
cinnamon, ground	0.5	Teaspoon	0.115925	1.3



Nutrition Facts	
Serving Size 1 muffin (94g)	
Servings Per Container about 12	
Amount Per Serving	
Calories 350	Calories from Fat 130
% Daily Value*	
Total Fat 14g	22%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 52g	17%
Dietary Fiber 9g	36%
Sugars 22g	
Protein 7g	
Vitamin A 0%	• Vitamin C 4%
Calcium 6%	• Iron 10%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Barley Project Healthy Barley Muffins

Ingredients: Date Paste, Barley Flakes, Mashed Banana, Barley Flour, Dried Blueberries, Hazelnuts, Honey, Sunflower Seed Butter, Vegetable Oil, Flax Seed Meal, Baking Powder, Vanilla Extract, Salt, Ground Cinnamon.

03/09/2015

Contains Tree Nuts.

Saturated Fat: low saturated fat

Cholesterol: cholesterol free

Protein: good source of protein

Dietary Fiber: high dietary fiber

Vitamin E - IU: good source of vitamin E

Barley Crumble Topping

1.5 C Rolled Barley

½ C Barley Flour

1 C Brown Sugar

½ tsp Cinnamon

1 C Unsalted Butter

Blend all ingredients by hand, with a mixer, or in a food processor until combined. Set aside.

Form scone dough into a disc to be cut into wedges. Form Barley Crumble Topping into a thin disc with the same diameter as the scone dough disc and place on top. Cut scones into wedges and bake normally or until the topping is golden brown and the scones are cooked through.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
butter, unsalted	1	Cup	34.67113	227.19977
sugar, brown, packed	1	Cup	33.69449	220.799857
barley, rolled, dry, flakes	1.5	Cup	20.14346	132
barley flour	0.5	Cup	11.29254	74
cinnamon, ground	0.5	Teaspoon	0.198383	1.3



Nutrition Facts	
Serving Size 2.3 oz (66g)	
Servings Per Container about 10	
Amount Per Serving	
Calories 320	Calories from Fat 170
% Daily Value*	
Total Fat 19g	29%
Saturated Fat 12g	60%
Trans Fat 0.5g	
Cholesterol 50mg	17%
Sodium 10mg	0%
Total Carbohydrate 38g	13%
Dietary Fiber 3g	12%
Sugars 21g	
Protein 3g	
Vitamin A 10%	• Vitamin C 0%
Calcium 2%	• Iron 4%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Barley Project Barley Crumble Topping

Ingredients: Butter, Brown Sugar, Barley Flakes, Barley Flour, Ground Cinnamon.

03/09/2015

Contains Dairy

Sodium: very low sodium

Dietary Fiber: good source of dietary fiber

Vitamin A - IU: good source of vitamin A

No-Bake Barley Bars – Adapted from “The Minimalist Baker” blog

<http://minimalistbaker.com/healthy-5-ingredient-granola-bars/>

1 C date paste

¼ C pear juice concentrate

¼ C sunflower seed butter

1 C crushed pecans

1 ½ C toasted and ground barley flakes

Pinch salt

- Stir together date paste, pear juice concentrate, and sunflower seed butter. You can warm them slightly to make it easier.
- Combine the ground barley flakes, salt, and crushed pecans, then add to date mixture.
- Press the mixture into the bottom of an 8 x 8 inch pan (or similar), that has been lined with plastic wrap or parchment paper, until even.
- Cover with additional plastic wrap and refrigerate for approximately 20-30 minutes.
- Lift the slab out of the pan, remove plastic wrap, and cut into bars.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
Dates, Deglet Noor, paste	1	Cup	43.932	320
barley, rolled, dry, flakes	1.5	Cup	18.12197	132
juice concentrate, pear, 70 brix	0.25	Pound	15.56816	113.4
pecans, halves	1	Cup	13.59148	99
sunflower seed butter	0.25	Cup	8.7864	64



Nutrition Facts	
Serving Size 1 bar (57g)	
Servings Per Container	
Amount Per Serving	
Calories 220	Calories from Fat 80
% Daily Value*	
Total Fat 9g	14%
Saturated Fat 0.5g	3%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 25mg	1%
Total Carbohydrate 35g	12%
Dietary Fiber 4g	16%
Sugars 19g	
Protein 4g	
Vitamin A 0%	• Vitamin C 2%
Calcium 2%	• Iron 6%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

INGREDIENTS: Date Paste, Barley Flakes, Pear Juice Concentrate, Pecans, Sunflower Seed Butter.

Contains Pecans.

Free of Saturated Fat

Free of Cholesterol

Free of Sodium

High Fiber

High Manganese

OSU Streaker Barley Scone Formula



Strawberry Barley Scones (Kimberly Howe; University Housing/Dining Pastry Chef)

Yield: about 34-4oz scones

1# 14oz	A.P. flour
1# 8oz	Barley flour
9oz	Brown Sugar
3oz	Baking Powder
1oz	Kosher Salt
15oz	Unsalted Butter
48fo	Heavy Whipping Cream

For Topping:

17oz	Strawberry Jam
3oz	Unsalted Butter
3oz	Granulated sugar

1. Mix together all dry ingredients in a large bowl.
2. Cut the butter into small pieces and rub into dry mix.
3. Mix the cream into the dry mix just until barely combined.
4. Transfer dough to bench. Use a 3.25oz scoop and portion all the dough to 4oz.
5. Using thumb, push down center of each scone to make deep indentation.
6. Top each scone with melted butter and sugar. Bake @ 325 for 10 minutes
7. Take scones out of oven. Using a Tablespoon, push down centers again and fill with jam
8. Bake for another 10-15 minutes.

Item Name	Quantity	Measure	% Weight	Total Weight (g)
cream, whipping, heavy	48	Fluid ounce	38.25043	1440
flour, all purpose, white, unbleached, sifted, enriched	1.875	Pound	22.59131	850.5
barley flour	1.5	Pound	18.07304	680.4
butter, unsalted	15	Ounce-weight	11.29565	425.25
sugar, brown, packed	9	Ounce-weight	6.777391	255.15
baking powder, double acting	3	Ounce-weight	2.25913	854
salt, kosher, coarse	1	Ounce-weight	0.753043	28.35

Nutrition Facts	
Serving Size 1 scone (109g)	
Servings Per Container about 34	
Amount Per Serving	
Calories 420	Calories from Fat 240
% Daily Value*	
Total Fat 26g	40%
Saturated Fat 16g	80%
Trans Fat 1g	
Cholesterol 85mg	28%
Sodium 630mg	26%
Total Carbohydrate 43g	14%
Dietary Fiber 3g	12%
Sugars 9g	
Protein 6g	
Vitamin A 20%	• Vitamin C 0%
Calcium 8%	• Iron 10%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
Calories:	2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

INGREDIENTS: Cream, Flour (bleached wheat flour, malted barley flour, niacin, iron, thiamin mononitrate, riboflavin, folic acid), Barley Flour, Butter, Sugar, Baking Powder (monocalcium phosphate, sodium bicarbonate, cornstarch), Salt.

Contains Milk, Wheat.

Good source of Protein

Good source of Fiber

Good source of Vitamin A

Commercial Formula:

	% of 1
AP Flour	0.413793103
Triple Milled Streaker Barley Flour	0.331034483
Free Flowing Brown Sugar	0.220689655
BakeShure 184 Balchem Encapsulated Leavening	0.016551724
Citric Acid	0.004137931
Kosher Salt	0.013793103

BakeShure® 184

Encapsulated Sodium Bicarbonate 85%
Product Code F4184011

PRODUCT SPECIFICATIONS:	Substrate Content: 83.0% - 87.0% Sodium Bicarbonate Appearance: White to Off-White, Free-Flowing Granules Particle Size: 2.0% Maximum on #60 Mesh Screen (USSS)
INGREDIENTS:	Sodium Bicarbonate [FCC, USP, E500(ii)] and Hydrogenated Vegetable Oil (contains one or more of the following hydrogenated oils: soybean oil, palm oil, and cottonseed oil). All ingredients are generally recognized as safe (GRAS) when used in accordance with applicable regulations.
CERTIFICATION:	This product is certified as kosher pareve. Although not certified as halal, this product neither contains, nor is manufactured with, the use of any ingredient of animal origin, natural L-cysteine, ethyl alcohol or enzymes.
PACKAGING:	<u>Cartons:</u> • 50 pound, 2-mil poly-lined, recyclable cartons. The liners are manufactured from olefin polymers that comply with 21 CFR 177.1520 and current EU regulations, and are suitable for use as packaging intended for direct contact with food ingredients. • 11.7" (H) x 15.5" (L) x 11.3" (W) = 1.2 ft ³ • Net Weight = 50 pounds (22.7 kg) • Gross Weight = 52 pounds (23.6 kg) <u>Pallet/Skid:</u> • 30 cartons per pallet (3 layers of 10 cartons) • 38.3" (H) x 48" (L) x 40" (W) = 42.5 ft ³ • Net Weight = 1500 pounds (680 kg) • Gross Weight = 1605 pounds (728 kg) • Pallets are wrapped with 60-80 gauge stretch film
GMO:	Raw materials must be assumed to be sourced from genetically modified (GM) materials but encapsulate should test free from detectable DNA or proteins. This encapsulate does contain ingredients derived from cultivated genetically-modified plants and should be considered GM under the requirements defined by current EU regulations.
ALLERGENS:	This product is manufactured and labeled in conformance with current US and EU food allergen regulations. It is made in a facility that handles highly refined, bleached and deodorized (RBD) oils, including those derived from soybean, cottonseed, sunflower, palm, palm kernel, and coconut. The presumed agents of food allergies are the proteins of

FOR CONSULTATION OR NEEDS ANALYSIS:

Balchem Corporation
52 Sunrise Park Rd,
New Hampton, NY 10958
Toll Free: 877.222.8811
Fax: 845.326.5717
e-mail: foodinfo@balchem.com

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BakeShure® 184

Encapsulated Sodium Bicarbonate 85%

the oilseed from which edible oils are extracted. Our oil suppliers maintain that the processing steps used in preparation of their oil products are the basis of the oils' exemption from labeling as allergenic.

Moreover, the manufacturing facility does not handle any of the following whole ingredients commonly considered allergenic: milk (including lactose), egg, fish, crustaceans and mollusks, tree nuts, wheat, peanuts, soybeans/soya, celery, mustard, lupin, gluten-containing cereals, sulfur dioxide/sulfites, sesame seeds, poppy seeds, and sunflower seeds.

NUTRITIONAL INFORMATION:

(Calculated per 100 g)

Total Calories	135	Total Carbohydrates	0 g
Calories from Fat	135	Dietary Fiber	0 g
Calories from Saturated Fat	135	Sugar	0 g
Total Fat	15 g	Other Carbohydrates	0 g
Saturated Fat	15 g	Protein	0 g
Trans Fat	0 g	Vitamin A	0 IU
Monounsaturated Fat	0 g	Vitamin C	0 mg
Polyunsaturated Fat	0 g	Calcium	0 mg
Cholesterol	0 mg	Iron	0 mg
Sodium	23,300 mg		
Potassium	0 mg		

SHELF LIFE, STORAGE & HANDLING:

Balchem Corporation has determined that proper storage conditions of all encapsulated materials are necessary to ensure optimum performance. Under recommended storage conditions, this encapsulate is best used within two years from date of manufacture. We recommend that any product held for more than two years be reevaluated for fitness before use; the useful shelf life for many encapsulates may extend up to five years.

Store the ingredient in a closed container in a dry, odor free environment between 50-90°F (10-32°C). Protect from heat and extreme cold. Exposure to temperatures below freezing or to extreme heat may impact the performance of the material. Take care to minimize the exposure of encapsulated ingredients to excessive shear or heated oils/water as these may compromise the integrity of the coating by abrasion or melting.

The Balchem Slate Hill facility follows current best practices by routinely swabbing its manufacturing environment (zones) and testing the swabs for aerobic plate count, yeast and mold, *Enterobacteriaceae*, *Listeria monocytogenes* and *Salmonella* to verify the sanitary condition of the manufacturing environment. Water is not used as an ingredient and the manufacturing process does not contribute moisture to the product. Balchem products have a wide pH range, but the typical water activity of our products is less than 0.50. It is generally accepted that bacteria require an A_w of at least 0.9 to grow, and fungi at least 0.7. Based upon microbial testing history, a lack of proper nutritional factors in our products, and a low water (A_w) content, we have concluded that our encapsulates are not potentially microbiologically hazardous, and that our encapsulates are not time/temperature controlled food ingredients.¹

BSE/TSE:

Balchem's suppliers have represented that no prohibited mammalian protein or any material originating from animal sources has been used in the manufacture of the raw materials for this encapsulate. Balchem does not handle any mammalian protein in its manufacturing plants. This product should not contain any BSE (Bovine Spongiform Encephalopathy) or TSE (Transmissible Spongiform Encephalopathies) specified risk materials and thus complies with 21 CFR 189.5 and current EU regulations.

¹ Evaluation and Definition of Potentially Hazardous Foods - Chapter 8. Framework Developed to Determine Whether Foods Need Time/Temperature Control for Safety. FDA Dec. 31, 2001. www.fda.gov

Bakesure® is an encapsulated leavening agent that protects the leavening from activating in the package during storage and for extended shelf life products.

Nutrition Facts

Serving Size 1/2 cup mix (56g)
Servings Per Container about 34

Amount Per Serving

Calories 190 **Calories from Fat** 5

% Daily Value*

Total Fat 0.5g **1%**

Saturated Fat 0g **0%**

Trans Fat 0g

Cholesterol 0mg **0%**

Sodium 610mg **25%**

Total Carbohydrate 42g **14%**

Dietary Fiber 3g **12%**

Sugars 8g

Protein 5g

Vitamin A 0% • Vitamin C 0%

Calcium 6% • Iron 10%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 • Carbohydrate 4 • Protein 4

OSU Barley Scone Mix

INGREDIENTS: Flour (bleached wheat flour, malted barley flour, niacin, iron, thiamin mononitrate, riboflavin, folic acid), Barley Flour, Sugar, Baking Powder (monocalcium phosphate, sodium bicarbonate, cornstarch), Salt.

Contains Milk, Wheat.

Good source of Protein

Good source of Fiber

Good source of Vitamin A

Dry Mix Packaging Options and Shelf Life Recommendations:

The shelf life of a dry mix for baking has a standard shelf life of 18 months to 24 months. The moisture level of the mix must be below 6% to maintain quality and eliminate the possibility of activating the leavening agents.

Many of the products that we have developed could be blended as a dry mix and sold as either an industrial food service product, or as a retail product.

Plastic Bags for You: www.pbfy.com



Our 5 lb Stand Up Pouch in Kraft is an attention grabber. Consumers will notice your product right away on store shelves when you package it in these shiny Stand Up Pouches. Each one is manufactured to be food safe. The manufacturing process for these pouches uses various laminates and less packaging materials than cans or boxes. Our 5 lb Stand Up Pouch in Kraft has a sturdy bottom that stands for filling and allows them to fold flat to take up less space in storage. The kraft color will contrast well with your chosen label or hot stamp. An included zipper closure keeps contents fresh.

Pouch Specifications:

11-7/8" x 19" + 5-1/2"

5 lb / 2.2 kg (based on coffee beans)

Thickness: 5.4 mil

Materials: PET / ALU / LLDPE

<http://pbfy.com/product/food-packaging/stand-up-pouches/standard-stand-up-pouches/5-lb-stand-up-pouch/5-lb-stand-up-pouch-kraft/>

References:

<http://balchem.com/fhn/bakeshure>

<http://www.cookbooks365.com/curry-cashew-savory-granola/>

<http://www.chow.com/recipes/30062-basic-granola>

<http://dinnerwithjulie.com/2013/04/16/barley-chocolate-chip-cookies/>

<http://www.101cookbooks.com/archives/nikkis-healthy-cookies-recipe.html>

<http://minimalistbaker.com/healthy-5-ingredient-granola-bars/>

Strawberry Barley Scones (Kimberly Howe; University Housing/Dining Pastry Chef)

<http://pbfy.com/product/food-packaging/stand-up-pouches/standard-stand-up-pouches/5-lb-stand-up-pouch/5-lb-stand-up-pouch-kraft/>