

# SOYBEAN FIBER MUFFINS



Experiment by:  
Rhoda Castillo, Scott Iwamura,  
Jordan Oshiro, Carlo Rada

# What is Soybean Fiber?



- ▣ Derived from the hulls of soybeans
- ▣ Insoluble dietary fiber



# What makes FI-1 Soy Fiber unique?

- ▣ Reduces caloric density
- ▣ Helps retain moisture
- ▣ Provides texture

# Characteristics



- ▣ Odorless
- ▣ Flavorless
- ▣ Uniform particle size
- ▣ Less than 0.1  
Calories per gram

*Photo courtesy of Baking Management*  
[http://baking-  
management.com/rd\\_applications/bm\\_imp\\_15431/](http://baking-management.com/rd_applications/bm_imp_15431/)

# Typical Composition

92.5 %	Total dietary fiber (insoluble)
92.5 %	Carbohydrate
3.5 %	Moisture
0.5 %	Fat
0.08 %	Saturated fat
0.40 %	Monounsaturated fat
0.02 %	Polyunsaturated fat
1.3 %	Protein
2.2 %	Ash

*Source: The Fibred Group*

# Soy Fiber in Other Food Products

- ▣ Health foods (e.g., nutrition bars)
- ▣ Cereal products
- ▣ Pasta products
- ▣ Dairy products
- ▣ Processed meats
- ▣ Sauces/dressings





# Experimental Process

Original



Batch# 1



Batch #2



Batch# 3



Batch# 4



\* Note – All trials have same added amount of FI-1 Soy fiber

# Muffin Flourishes



Sharp Cheddar Cheese



Bacon

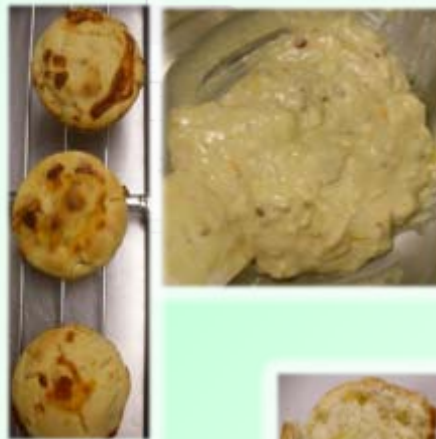


# Experimental Process

**Batch #5**



**Batch #6**



**Batch #7**



**Batch #8**



\* Note – All trials have same added amount of FI-1 Soy fiber

# High Fiber Cheese and Bacon Muffin Recipe

## Ingredients (12 muffins)

	Original Recipe	Final Recipe
All purpose flour, sifted	2 cup	1 ¼ cup
Sugar	¼ cup	¼ cup
Baking powder	3 tsp	3 tsp
Salt	½ tsp	½ tsp
Egg	1 whole, large	1 whole, large
Canola oil	¼ cup	1/3 cup
Fat free milk	1 cup	1 cup + 3 Tbsp
Soy fiber	-	¾ cup
Sharp cheddar cheese	-	2/3 cup
Crumbled bacon bits	-	1/2 cup or 5 crumbled strips

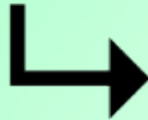
# Procedure



- ▣ Prepare bacon bits
- ▣ Mix cheese and bacon into dry
- ▣ Mix wet into dry (don't over mix)
- ▣ Bake
- ▣ Sprinkle cheese and broil
- ▣ Enjoy!

# Nutrient Content

High Fiber



Nutrition Facts	
Serving Size (55g)	
Servings Per Container	
Amount Per Serving	
<b>Calories</b> 160	Calories from Fat 80
% Daily Value*	
<b>Total Fat</b> 9g	<b>14%</b>
Saturated Fat 1.5g	<b>6%</b>
<b>Cholesterol</b> 25mg	<b>8%</b>
<b>Sodium</b> 330mg	<b>14%</b>
<b>Total Carbohydrate</b> 21g	<b>7%</b>
Dietary Fiber 5g	<b>21%</b>
Sugars 5g	
<b>Protein</b> 4g	
Vitamin A 0%	• Vitamin C 0%
Calcium 15%	• Iron 15%

# Sensory Evaluation Form

## ▣ Ingredients list

- All purpose flour
- Fat free milk
- Canola oil
- FI-1 Soy Fiber
- Sharp cheddar cheese
- Egg
- Sugar
- Crumbled bacon bits
- Baking powder
- Salt

**Sensory Evaluation for Soybean Fiber Muffins**

**Ingredients:** All purpose flour, fat free milk, canola oil, FI-1 Soy Fiber, sharp cheddar cheese, egg, sugar, bacon bits, baking powder, salt

1. Please evaluate the muffin sample and circle the number that best describes how you feel about the muffin.  
(1 meaning Dislike extremely to 5 meaning Like extremely)

	Dislike extremely		Neither like nor dislike		Like extremely
Appearance	1	2	3	4	5
Aroma	1	2	3	4	5
Moisture	1	2	3	4	5
Tenderness	1	2	3	4	5
Flavor	1	2	3	4	5

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. Please circle the number that best describes your acceptability of the muffin.

Dislike extremely	Dislike	Neither like nor dislike	Like	Like extremely
1	2	3	4	5

Please comment why \_\_\_\_\_

3. I would eat this muffin:

☐ every day  
☐ 3-4 times a week  
☐ once a week  
☐ once a month or less  
☐ never

Additional comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Thank you for your participation!!

\* If you're allergic to any of these ingredients, please do not consume the muffin.

## Sensory Evaluation for Soybean Fiber Muffins

**Ingredients:** All purpose flour, fat free milk, canola oil, FI-1 Soy Fiber, sharp cheddar cheese, egg, sugar, bacon bits, baking powder, salt

1. Please evaluate the muffin sample and circle the number that best describes how you feel about the muffin.  
(1 meaning Dislike extremely to 5 meaning Like extremely)

	Dislike extremely		Neither like nor dislike		Like extremely
Appearance	1	2	3	4	5
Aroma	1	2	3	4	5
Moisture	1	2	3	4	5
Tenderness	1	2	3	4	5
Flavor	1	2	3	4	5

Comments:

---

---

---

---

---

---

2. Please circle the number that best describes your acceptability of the muffin.

Dislike extremely	Dislike	Neither like nor dislike	Like	Like extremely
1	2	3	4	5

Please comment why \_\_\_\_\_

3. I would eat this muffin:

\_\_\_\_ every day  
\_\_\_\_ 3-4 times a week  
\_\_\_\_ once a week  
\_\_\_\_ once a month or less  
\_\_\_\_ never

Additional comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for your participation!!



# Questions ?

- ▣ Ingredients list
  - All purpose flour
  - Fat free milk
  - Canola oil
  - FI-1 Soy Fiber
  - Sharp cheddar cheese
  - Egg
  - Sugar
  - Crumbled bacon bits
  - Baking powder
  - Salt



**Thank You!**