

French Toast Muffin made with Cottonseed Fiber



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Objective



- To modify an existing muffin recipe by adding enough cottonseed fiber to be able to label our muffin “high fiber.”
- The resulting product should be sensory acceptable

What is fiber?



- **Dietary fiber is the edible non-digestible component of carbohydrate and lignin naturally found in plant food**
- **Soluble fiber is digestible**
- **Insoluble fiber is indigestible**

Benefits of Fiber



- Promotes regularity
- Improves serum lipid concentrations
- Lowers blood pressure
- Improves blood glucose in diabetes
- Aids in weight loss
- Improve immune function
- Reduces risk for developing the following diseases:
 - ✦ Coronary heart disease
 - ✦ Stroke
 - ✦ Hypertension
 - ✦ Diabetes
 - ✦ Obesity
 - ✦ Colon cancer
 - ✦ Certain gastrointestinal disorder

Dietary Fiber Sources

- Grain products
- Fruits
- Vegetables
- Legumes, nuts, soy

Fiber

Food sources of fiber include whole wheat, bran, fresh or dried fruits, and vegetables



Definition of high fiber



- “High”: 20% + of the RDI per reference amount (55g)
- Dietary recommendation: 25-30g/day
- 5g/ serving
- *“Most Americans don’t get enough dietary fiber, vitamin A, vitamin C, and calcium, and iron in their diets.” (FDA)*



What is Cottonseed fiber?



JustFiber BVF200...

- **Vegetable fiber from cottonseed**
- **White & tasteless**
- **A water binding agent**
- **Improves dimensional stability**



Nutritional Benefits



- **Non-caloric**
- **99% insoluble dietary fiber**
 - Associated with decreased cardiovascular risk and slower progression of cardiovascular disease in high-risk individuals
- **Primarily used in baked goods, spices, pasta, cheese products**



Reasons for flourish

- **Apple sauce**
 - Increase moisture
 - Reduce fat percentage
 - Improve texture
 - Add color
- **Cinnamon**
 - Improve flavor
 - Add aroma



Experimental Challenges



Challenges	Solutions
Adding fiber & dryness	<ul style="list-style-type: none">•Reduced flour•Increased milk, oil, & eggs•Added applesauce
Bland	<ul style="list-style-type: none">•Increased sugar•Added cinnamon
Pale	<ul style="list-style-type: none">•Increased egg•Added applesauce•Used an egg wash
Bitter	<ul style="list-style-type: none">•Increased sugar & applesauce
Weight	<ul style="list-style-type: none">•Increased applesauce•Increased milk & egg

Trial 1
•Added fiber
•↓Flour
•↑Milk

Trial 2
•↓Milk
•↑Oil & egg

Trial 3
•↑Sugar

Trial 4
•Added applesauce
•↓Oil
•Added cinnamon

Trial 5
•↑Sugar,
applesauce, liquid

Trial 6
•Recreate trial 5
•↑Milk & Egg
•Egg wash

Trial 7
•Replaced oil w/
applesauce
•Egg wash

Trial 8
•6 muffin
batch

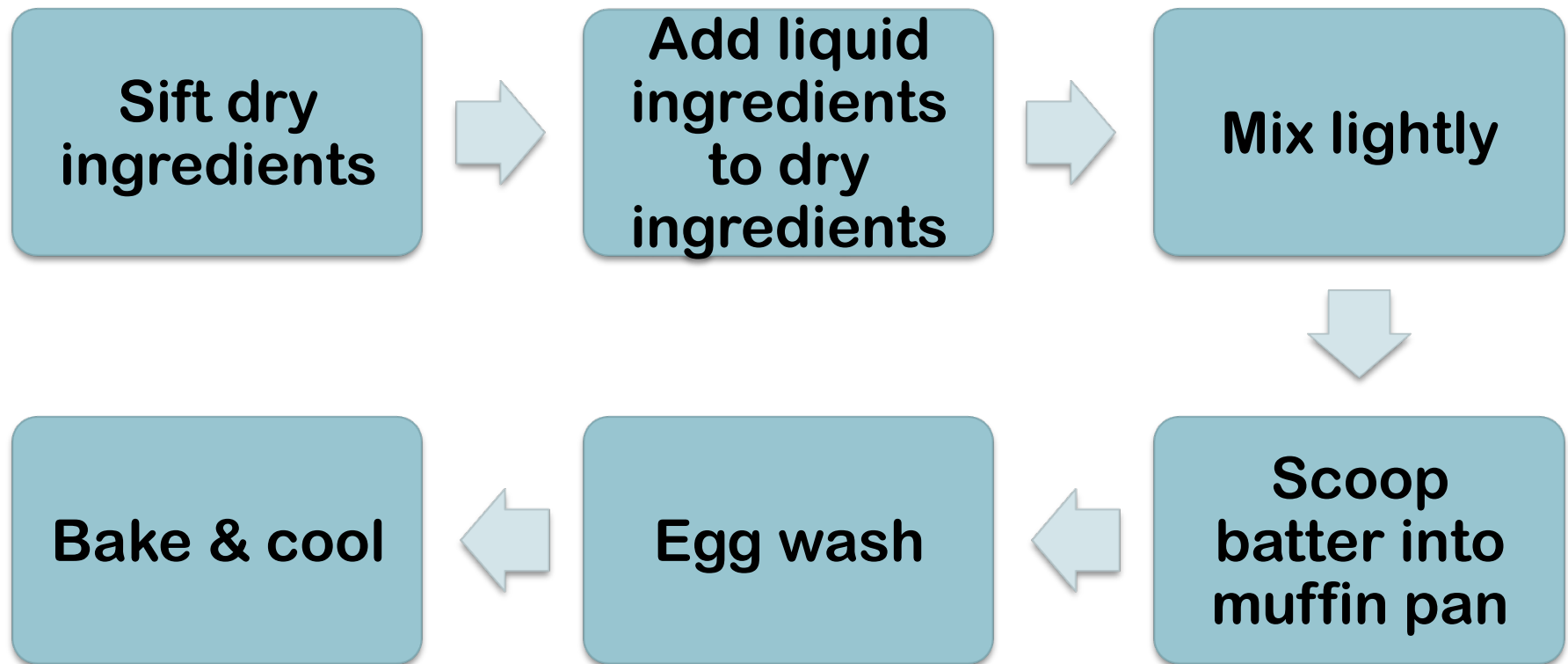
French toast muffin recipe



**Yields:
6 muffins**

Ingredients	Original	High Fiber
All purpose flour, sifted	1 c.	$\frac{3}{4}$ c.
Sugar	2 Tbs.	3 Tbs.
Baking powder	1 $\frac{1}{2}$ Tsp.	1 $\frac{1}{2}$ Tsp.
Salt	$\frac{1}{4}$ Tsp.	$\frac{1}{4}$ Tsp.
Egg	$\frac{1}{2}$	9/10
Canola oil	2 Tbs.	1 $\frac{1}{2}$ Tbs.
Skim Milk	$\frac{1}{2}$ c.	1 $\frac{1}{2}$ c.
Cinnamon Applesauce		1 Tbs. + 1 Tsp.
Cinnamon		$\frac{1}{8}$ Tsp.
Cottonseed Fiber		1 c.

Baking Procedure



Nutrition Label



Original Recipe

Nutrition Facts	
Serving Size (56g)	
Servings Per Container	
Amount Per Serving	
Calories 150	Calories from Fat 50
% Daily Value*	
Total Fat 6g	9%
Saturated Fat 0.5g	3%
Cholesterol 20mg	7%
Sodium 230mg	10%
Total Carbohydrate 21g	7%
Dietary Fiber less than 1g	2%
Sugars 5g	
Protein 3g	
Vitamin A 2%	Vitamin C 0%
Calcium 10%	Iron 6%

High Fiber Recipe

Nutrition Facts	
Serving Size (55g)	
Servings Per Container	
Amount Per Serving	
Calories 110	Calories from Fat 35
% Daily Value*	
Total Fat 3.5g	6%
Saturated Fat 0g	0%
Cholesterol 35mg	11%
Sodium 220mg	9%
Total Carbohydrate 17g	6%
Dietary Fiber 5g	19%
Sugars 6g	
Protein 3g	
Vitamin A 0%	Vitamin C 0%
Calcium 8%	Iron 4%

SENSORY EVALUATION: COTTONSEED FIBER MUFFIN

- This sample contains: cottonseed fiber, all-purpose flour, sugar, baking powder, salt, egg, vegetable oil, skim milk, cinnamon apple sauce, & ground cinnamon. Please DO NOT eat this sample if you are allergic to any of these ingredients.
- Please taste the sample and **circle** the rating that best describes the characteristic.

	Extremely Dislike	Dislike	Neutral	Like	Extremely Like
Appearance	1	2	3	4	5
Aroma	1	2	3	4	5
Texture	1	2	3	4	5
Taste	1	2	3	4	5

Please share your comments:

Please check (✓) the statement that describes your overall feeling towards this product:

- ☐ I would eat this everyday
☐ I would eat this often
☐ I would eat this occasionally
☐ I would never eat this

Additional comments or suggestions on how to improve this product: _____

Thank you for your participation!



Please do not
eat this muffin
if you are
allergic to any
of the
following
ingredients

- All Purpose Flour
- Baking Powder
- Sugar
- Salt
- Cinnamon
- Eggs
- Canola Oil
- Skim Milk
- Cinnamon Applesauce
- Cottonseed Fiber

Thank You for your time!



QUESTIONS?