

Challenge: Solved

A TAPIOCA STARCH CASE STUDY





Smooth, sliceable,
shreddable cheese
alternatives

Great Taste and Texture in Cheese Alternative

Today, consumers are seeking plant-based alternatives to dairy cheese for a variety of reasons, including overall health and wellness, specific dietary and lifestyle restrictions, and environmental concerns.

These consumers may have different motivations for choosing dairy-free alternatives in their favorite snacks and meals, but they share the same deal-breaker demand: great taste and texture that matches that of dairy cheese. Our texture experts tackled the challenge, applying their know-how to create an easily sliceable and shreddable block cheese alternative with full, round flavors—for a delicious and satisfying eating experience.



60% of the global population reports following a plant-forward lifestyle.¹



83% of U.S. consumers who identify as flexitarian, vegetarian or vegan have tried a plant-based cheese; a 13% increase vs 2020.²



64% of plant-forward global consumers say nutritional benefits are the leading motivator for their consumption of dairy alternatives.²

¹ ADM Outside VoiceSM Global Trends Research, May 2023

² ADM Outside VoiceSM Global Plant Protein Consumer Discovery Report, January 2023



Matching the taste and texture of dairy cheese with plant-based ingredients is a formidable task, but we were up to the challenge, creating a successful block cheese alternative that can also be tailored to your specific flavor and color requirements.

CHALLENGE

To develop an appealing alternative cheese product with attributes to mirror dairy-based cheese in terms of slice, shred and restricted melt performance.

SOLUTION

A firm solid block cheese alternative with great sliceability, smooth shred and melt that outperformed a leading market product in sensory testing.

The winning system features ADM ingredient solutions working in unison:

Texperien™ Max tapioca starch system delivers texture, stretch, emulsification, viscosity and water binding properties

Stabrium™ hydrocolloid solutions 301 provides additional texture, viscosity and water-holding capability

Ultralec® P lecithin improves anti-sticking properties, emulsification and mouthfeel

Sodium citrate adjusts for pH without off-notes

Customizable natural flavor and color variations of mozzarella, Parmesan, Italian and more

SPOTLIGHT: TEXPERIEN™ SYSTEM

The best system required three specialty Texperien™ Max tapioca starches for maximum performance:

1

Viscosity and water binding functionality; improves stability during processing, including shear and higher temperature (~85°C).

2

Emulsification; the oil-binding ability assists in reducing oiling off during cooking of the finished product.

3

Texture and stretch characteristics; this starch contributes hardness, chewability and possible increased stretch characteristics.



CUTTING-EDGE FORMULATION EXPERTISE

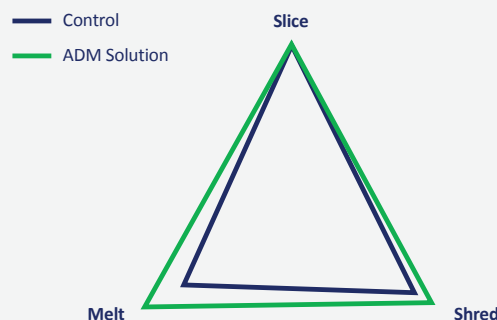
The challenging process of perfecting a plant-based block cheese requires deep understanding of ingredient functionality when working together. We tested multiple systems to identify a workable formulation providing the desired attributes of slice, shred and restrictive melt.

MARKET CONTROL VS. SOLUTION

A group product evaluation was conducted, comparing market-leading alternative shredded cheese to ADM's plant-based cheese alternative, with the following results:

CONTROL: MARKET-LEADING ALTERNATIVE SHREDDED CHEESE

- Oily mouthfeel
- Strong off-flavor
- Short and brittle texture
- Breaks apart in mouth



ADM PLANT-BASED BLOCK CHEESE ALTERNATIVE

- Improved, less oily mouthfeel
- Better cheese flavor upfront
- Texture similar to stick cheese
- Shreds look like shredded cheese
- Slices like real traditional cheese
- Slight dairy notes

A Label that Stands Out and Stands Up

Whether motivated by their health or environmental concerns, many cheese-loving consumers are looking for dairy-free alternatives. This delicious, sliceable, shreddable version has wide appeal that may be proclaimed 'plant-based', 'vegan' or 'dairy-free.'

PLANT-BASED BLOCK CHEESE ALTERNATIVE

Nutrition Facts	
Serving size	1 slice (22g)
Amount Per Serving	
Calories	70
% Daily Value*	
Total Fat 5g	6%
Saturated Fat 4.5g	22%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 100mg	4%
Total Carbohydrate 6g	2%
Dietary Fiber 0g	0%
Total Sugars 0g	
Includes 0g Added Sugars	0%
Protein 0g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 0mg	0%
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

POTENTIAL FRONT OF PACK LABEL CLAIMS:

- Vegan
- Dairy-free
- Plant-based
- Gluten-free

KEY ADM INGREDIENTS:

- Texperien™ Max Modified Tapioca Starches
- Stabrium™ Hydrocolloid Solutions 301
- Ultralec® P Lecithin
- Natural cheese flavors
- Natural fatty mouthfeel flavor

INGREDIENTS:

FILTERED WATER, MODIFIED TAPIOCA STARCH, COCONUT OIL, NATURAL FLAVOR, SALT, PEA FLOUR, KONJAC GUM, XANTHAN GUM, SODIUM CITRATE, SOY LECITHIN, LACTIC ACID.

ALLERGENS:

SOY, TREE NUT (COCONUT)



SOLVE TOMORROW'S CHALLENGES TODAY WITH ADM

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