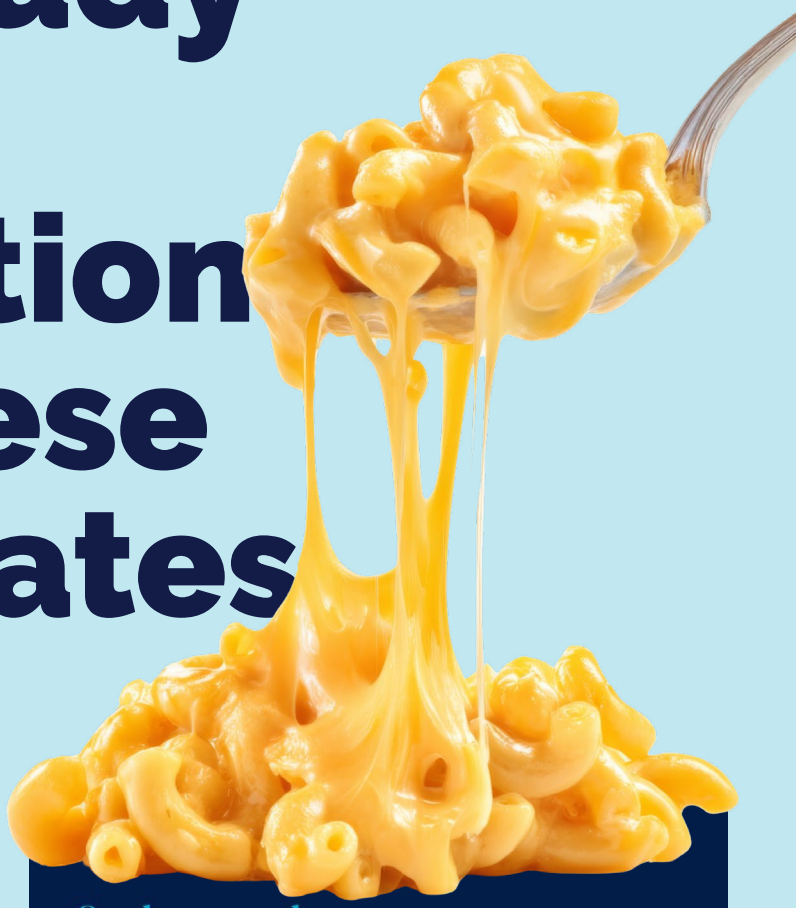
Bluegrass
Agile Ingredient Innovation®

A Case Study on Cost Optimization with Cheese Concentrates



Product developers understand the challenge. Dairy products deliver incredible flavor and functionality, but they also come with high variability and cost. Dairy prices fluctuate greatly, refrigerated storage and handling requirements are demanding, and inclusion rates dramatically impact margins.

Finding ways to optimize this critical ingredient without compromising taste or texture has become a top priority for product developers, as margins come increasingly under pressure from rising ingredients costs.

DAIRY CONCENTRATES OFFER A PROVEN SOLUTION.

By delivering consistent, concentrated flavor in a stable, consistent format, dairy concentrates allow developers to achieve the same sensory impact with far less real cheese. For food brands, this translates to improved margins without sacrificing quality.

To make the optimization process easier, we built a **Cheese Substitution Calculator** designed specifically for product developers. However, the calculator only tells half the story. To show the actual potential cost savings of using cheese concentrates, let's look at an actual case study from a recent cost optimization project with a large food manufacturer.

See how much you can save

Enter the inputs below to calculate your annual savings.

Current Cheese Cost Per Pound

$ 4.50

Current Percentage of Cheese in Formula

% 2.5

Current Annual Pounds of Cheese purchased

lbs 1000

Approximate Cost Savings (Annually)*

$-

*Savings calculations are estimates only. Actual savings could be even greater.

CASE STUDY

MAC & CHEESE COST OPTIMIZATION

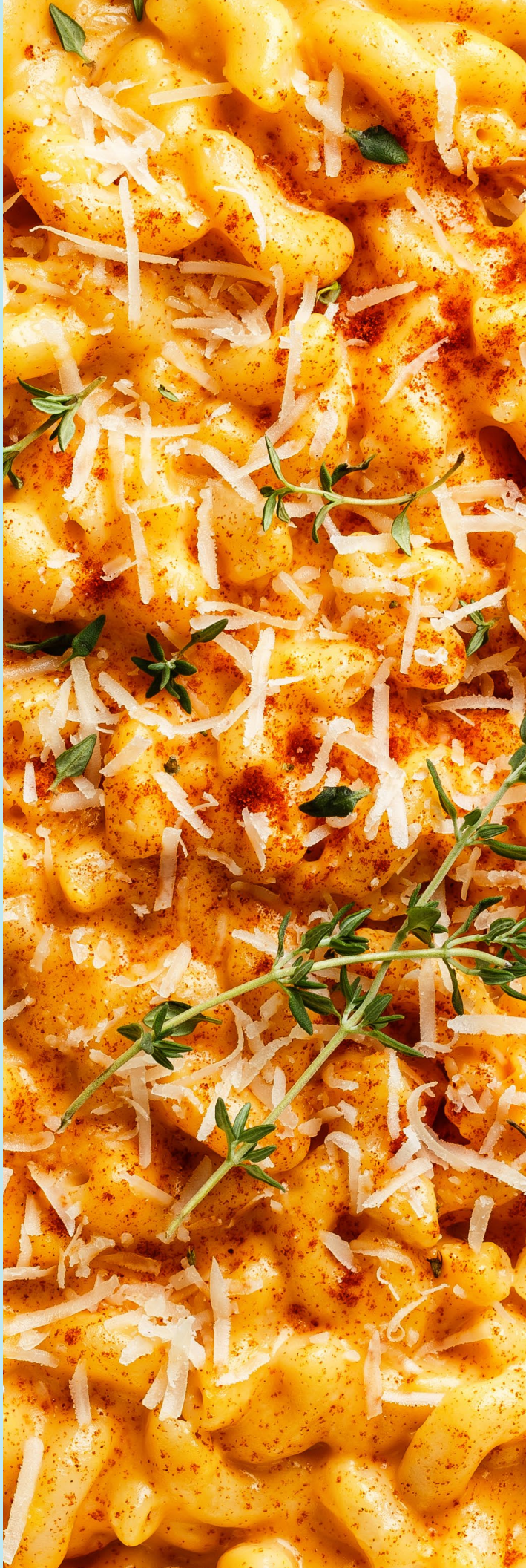
We had a customer come to us recently with a goal of reducing the costs of the cheese sauce they use in their packaged mac and cheese. When taking on a project like this, we first assess the potential for a partial or complete dairy replacement with concentrates. In this example, there were six dairy ingredients used.

- Pasteurized Process American Cheese
- Whole Milk
- Heavy Cream
- Sharp Cheddar Cheese
- Salted Butter
- Nonfat Dry Milk

In theory, we could develop a formula that would replace all these natural dairy products with concentrates, but the impact to the formula and processing requirements would be too great.

Instead, we looked at a partial replacement of dairy that would deliver cost savings with minimal impact to the nutritionals, labeling and processing of the sauce. Our team quickly identified sharp cheddar cheese as the ingredient to target for replacement. It's expensive, and at 5% usage, has the potential to deliver significant cost savings.

INGREDIENT	Control %	Test %
Pasteurized Process American Cheese	26.85	26.85
Water	24.00	25.20
Whole Milk	24.00	24.00
Heavy Cream	10.00	10.00
Sharp Cheddar Cheese	5.00	0
BGI Cheddar Concentrate CNC0001	0	.75
Canola Oil	5.00	6.60
Salted Butter	1.50	1.50
Corn Starch	1.00	1.35
Wheat Flour	1.00	1.35
Nonfat Dry Milk	1.00	1.60
Lactic Acid	0.20	0.25
Xanthan Gum	0.05	0.05
Sodium Citrate	0.20	0.20
Salt	0.20	0.30
TOTAL	**100**	**100**

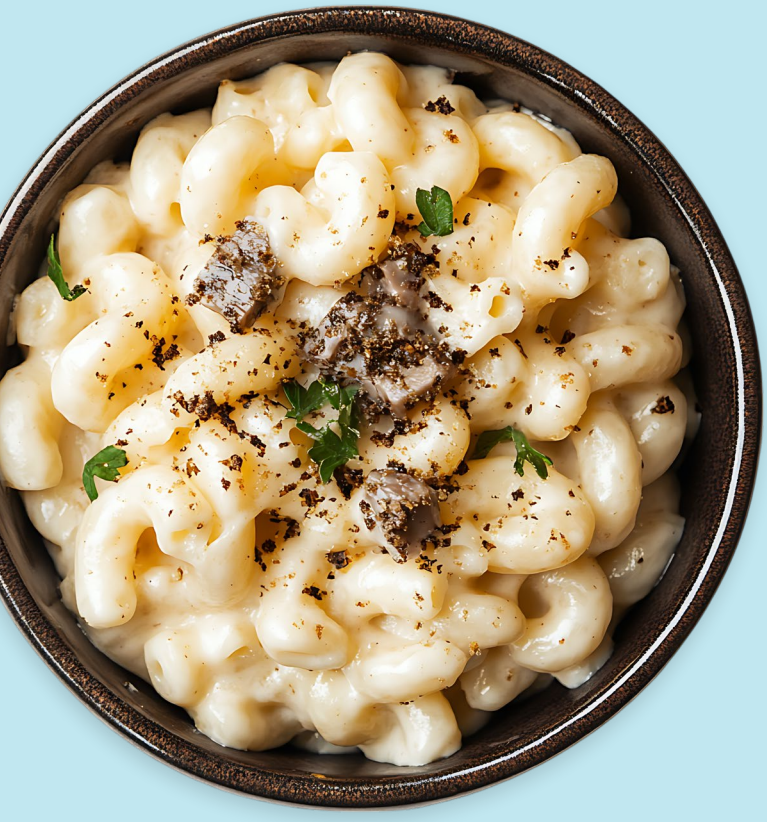


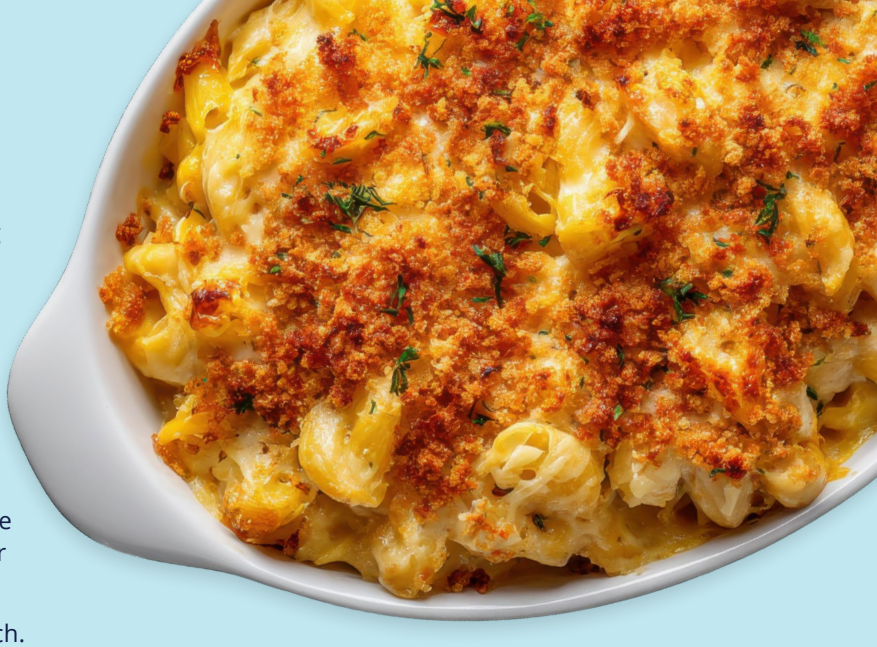
THE SCIENCE AND ECONOMICS OF COST OPTIMIZATION

Before digging into the specific cost savings of replacing sharp cheddar cheese with a cheddar concentrate, it's important to understand two factors that go into every ingredient substitution:

- **Cost per pound vs. cost-in-use:** Sourcing and procurement often look at things in a black-and-white manner. In this case, the cost per pound of the ingredient. However, that's not the correct measurement when using concentrates. Instead, the cost-in-use in a formula is a more accurate indicator of true ingredient cost.
- **Macros vs. micros:** Substitution is rarely a 1:1 switch. To achieve identical flavor, texture and mouthfeel when substituting from a natural cheese to a cheese concentrate, you also have to adjust micro ingredients. Most of the changes are to ingredients that are used at less than 2% of the total formula.

For the cheese sauce example, our goal was to not add any new ingredients other than our CNC0001 Factor 10 Cheddar Concentrate. To accomplish this, we had to adjust existing micro ingredients as you can see in the Test % column. These minimal adjustments are highlighted in yellow and are factored in the overall cost savings.





CALCULATING COST SAVINGS

By using cost-in-use calculations in the cheese sauce formula, we look at two types of savings:

- **Natural Cheese Cost Savings:** We reduced natural cheese ingredient costs by 50%.
- **Total Formula Cost Savings:** When factored into the overall formula and accounting for micro ingredient adjustments, we reduced the total cost of the cheese sauce by 8+%. Your savings may be different based on your current formula ingredient costs.

That's a massive contribution to any cost savings effort, especially when you consider that we preserved the flavor, color, texture and mouthfeel of the original cheese sauce.

> **THERE'S ALSO MORE TO THE COST SAVINGS THAN WHAT SHOWS UP IN THE FORMULA. CHEDDAR CHEESE HAS UP TO 39% MOISTURE CONTENT. SO, WHEN YOU'RE USING IT, YOU'RE SHIPPING AND STORING A LOT OF WATER. THAT ADDS SIGNIFICANT COSTS TO YOUR FORMULA.**

It also has to be refrigerated, which adds even more costs. Our cheddar concentrate costs less to ship and store, and some Bluegrass Dairy Concentrates do not need to be refrigerated. There's also not the wide price volatility in dairy concentrates that you see in other dairy ingredients.

In today's economic environment, formulation decisions carry both functional and financial implications. By leveraging dairy concentrates, food brands can unlock cost savings that improve margins. Our **Cheese Substitution Calculator** is a great place to start. Check it out, and then contact our **formulation experts** to gain even more valuable insight on the true cost savings of partial or whole replacement of dairy ingredients.

Bluegrassingredients.com
info@bluegrassingredients.com
Sales Inquiries: +1-270-297-7850
LinkedIn
Newsletter
801 State Street
Bowling Green, KY 42101