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CASE STUDY

The Fibre Upp-grade: Transforming Cottage Pie Without Compromise

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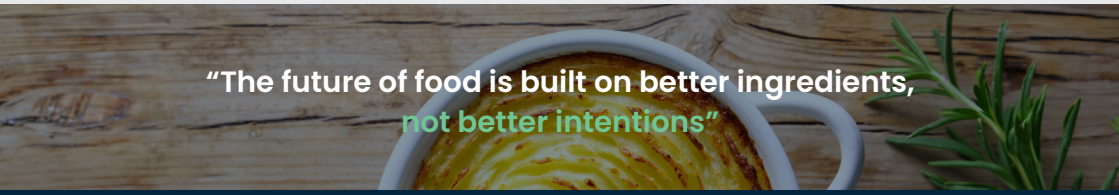
Meet the cast

UPP transforms underutilised brassica crops into sustainable protein and fibre ingredients for food manufacturers. Through its harvest-to-ingredient platform, UPP helps brands improve nutrition, reduce emissions, and lower costs. Its ingredients are designed to integrate seamlessly into existing products without compromising taste or texture.

Fiba™ is UPP's upcycled brassica fibre ingredient, designed to increase fibre content in everyday foods. It enables manufacturers to improve nutritional value while maintaining consumer-preferred taste and texture. Clean-label and allergen-free, Fiba™ delivers a practical route to healthier, more sustainable products.

Bynda™ is UPP's next-generation dried fermented fibre ingredient, created from underutilised brassica crops. It enables food manufacturers to increase fibre content, support gut health positioning, and enhance sustainability credentials without compromising consumer appeal. Clean-label, allergen-free, and easy to integrate, Bynda™ is designed for scalable food reformulation.



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Upp-grading the cottage pie

Overview

This project assessed the ability of Fiba™ and Bynda™ to improve the nutritional profile of the cottage pie- a staple of the UK ready meal market, while preserving the sensory characteristics expected from a traditional ready meal. The findings demonstrate how ingredient innovation can support healthier, more sustainable food development while maintaining consumer appeal and product functionality

Background & objectives

As consumer demand grows for healthier and more sustainable convenience foods, manufacturers are seeking opportunities to improve the nutritional profile of established products without compromising quality. This project evaluated the use of UPP Freya's upcycled brassica ingredients in a traditional cottage pie to enhance nutritional value, simplify allergen management, and maintain the eating experience consumers expect.

The product

The product featured in this study was a traditional cottage pie, comprising a savoury minced beef filling topped with creamy mashed potato. The UPP-enhanced formulation incorporated Fiba™ as a partial meat replacement and Bynda™ as a functional thickening ingredient within the filling. The objective was to improve the product's nutritional credentials while preserving its familiar taste, texture, appearance, and overall consumer appeal.

(1) Source: https://www.marketresearch.com/GlobalData-v3648/United-Kingdom-UK-Ready-Meals-39462472/

Implementation & next steps

Implementation strategy

- Replaced a portion of the beef content with Fiba™ to increase fibre content and improve nutritional density.
- Substituted conventional flour with Bynda™ to provide functionality while removing a key allergen from the recipe.
- Maintained the existing product format, cooking process, and serving experience to minimise reformulation complexity.
- Evaluated nutritional, sensory, and functional performance against the original control recipe to ensure product quality was retained.

Conclusion

The UPP-enhanced cottage pie successfully demonstrated that nutritional improvements can be achieved without compromising the taste, texture, or appearance of a traditional ready meal. The reformulated product delivered stronger nutritional credentials, simplified allergen management, and maintained the consumer experience expected from the category.

Next steps

- Validate performance through consumer sensory testing and larger-scale production trials.
- Explore further optimisation of fibre enrichment and nutritional positioning.
- Assess application across additional ready meal and meal centre formats.
- Develop a roadmap for commercial implementation and on-pack claim activation.

Metric	Key Result
Fibre	+125%
Nutrition	-12% kcal, -20% fat, -22% saturates
Claims	High Protein, Source of Fibre, Low Sugar

Appendix [1]

Product makeup

- 200g total weight of product: 118g Mash element, 82g Filling
- 10% cook loss
- Baked at 180C for 25 minutes

Control

QUID: Potato, Minced Beef (34%), Beef Stock , Red Wine, Onions, Milk, Butter, Olive Oil, Tomato Puree, Flour, Black Pepper, Salt, Worcestershire Sauce, Thyme

- Allergens Contains Milk, Gluten

Upp-graded

QUID: Potato, Minced Beef (24%), Fermented Broccoli Fibre (10%), Beef Stock, Red Wine, Onions, Milk, Butter, Dried Fermented Broccoli Fibre (1%) , Olive Oil, Tomato Puree, , Black Pepper, Salt, Worcestershire Sauce, Thyme

- Allergens: Contains Milk

Functional & sensory evaluation

Attribute	Control	Upp-graded
Texture	Creamy Mash potato, firm filling but not overly chewy/tough	Creamy Mash potato, firm filling but not overly chewy/tough
Flavour	Creamy, buttery potato- savoury mince filling, well seasoned with richness from stock and wine	Creamy, buttery potato- savoury mince filling, well seasoned with richness from stock and wine no overt brassica/ broccoli notes

Appendix [2]

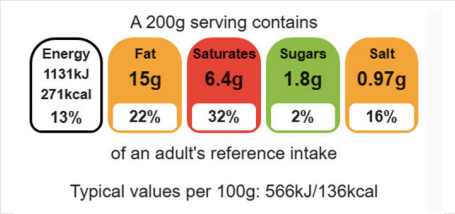
Nutritional attributes - calculated using Nutricalc (2)

Nutritional comparison (per 100g)

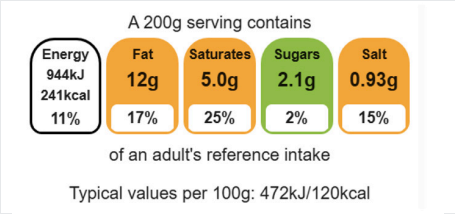
	Control	Upp-graded	Variance	% Change
Energy kcal	136	120	-16.00	-12%
Energy kJ	566	472	-94.00	-17%
Protein	7.8	6	-1.80	-23%
Fat	7.5	6	-1.50	-20%
Of which saturates	3.2	2.5	-0.70	-22%
Carbohydrates	7.3	7.7	0.40	5%
Sugars	0.9	1.1	0.20	22%
Fibre	0.8	1.8	1.00	125%
Salt	0.48	0.46	-0.02	-4%

Front of pack nutritional messaging comparison

Control



Upp-graded



Claims & positioning (3)

- Control Potential Claims: High Protein, Low sugar
- UPP-Graded Potential Claims: High Protein, Source of Fibre, Low Sugar

(2) Nutritional Data Disclaimer: Nutritional profiles generated via theoretical calculation using NutriCalc® software and have not been verified by laboratory testing. Actual nutritional content may vary due to natural ingredient fluctuations, supplier differences, and physical changes during manufacturing

(3) Based on UK/EU Regulation (EC) No 1924/2006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