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"Process Development and Evaluation of Cooking and Nutritional Properties of Instant Filled and Functional Pasta"

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INTRODUCTION

This PhD research focuses on the development and evaluation of two innovative types of instant pasta: filled pasta and nutraceutical pasta. A novel production process will be developed for smaller-diameter tortellini, and new functional instant products will be created using high-amylose soft wheat flour, β-glucan enriched oat or barley flours, and malted legume flours. This research aims to provide nutritionally enhanced instant pasta alternatives with a low glycemic index, high β-glucan content, high protein content, and gluten-free options.

State of the Art

Instant noodles, originally born in Japan in 1958, have become a global food present in the diet of people around the world with about 121 billion servings consumed annually in 2022 (WINA, 2023). Instant noodles are typically low in essential nutrients and high in unhealthy components like MSG and saturated fats. Recent innovations in instant pasta focus on enhanced nutritional profiles without harmful additives

Objectives

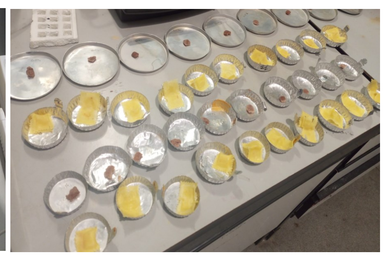
1. Evaluate Cooking and Rehydration Properties
2. Develop Production Process for Instant Tortellini
3. Create Functional Instant Products
4. Organoleptic Testing
5. Scale-Up and Cost Analysis
6. Writing and Editing of PhD thesis and publications

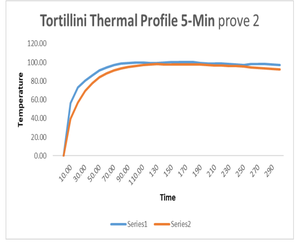
	Activity	Month no.																	
		2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
A1)	State of art & evaluation of cooking and rehydration properties of selected commercial instant pastas	■	■	■	■	■	■												
A2)	Development of the production process for Instant tortellini							■	■	■	■								
A3)	Development of new functional/nutraceutical instant pastas											■	■	■	■	■			
A4)	Organoleptic testing													■	■	■			
A.5)	Scaling up & cost analysis of the industrial-scale processing											■	■	■	■	■			
A6)	Writing and Editing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

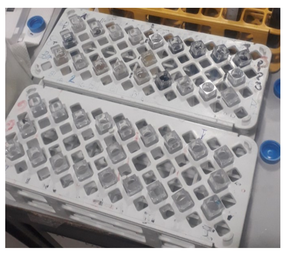
Priliminary Findings

INSTANT Tortellini | INSTANT Quadrucci | Humidity Analysis | Thermal Profile analysis | Gelatinized Starch testing






A series of preliminary analyses were conducted on instant pasta, tortellini, and Quadrucci to evaluate their cooking quality and properties. Humidity levels were determined using the AOAC method, and thermal profile analysis provided insight into the heat behavior during cooking. Additionally, cooking loss and gelatinized starch testing were performed to assess the degree of starch gelatinization. Instant pasta was evaluated using both traditional cooking methods in a pot and alternative methods in an oven. Future work will involve texture profile analysis and further testing in collaboration with **Toscantia company**.

References

1. Gulia N; Dhaka V; Khatkar BS (2014). Instant noodles: Processing, quality and nutritional aspects. Critical Reviews in Food Science and Nutrition, 54(10), 1386-1399. DOI: 10.1080/10408398.2011.638227.

2.WINA (World Instant Noodles Association) (2023) Global demand for instant noodles.

3.USDA (2010). Commercial item description soup, noodle, ramen, instant.