Foods 2025 Conference
The 6th International Electronic Conference on Foods
28–30 October 2025 | Online
MDPI

Wheat dry pasta enriched with aromatic herb powders: technological and textural properties

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INTRODUCTION & AIM

The incorporation of plant-based ingredients into staple foods is a growing trend aimed at enhancing their nutritional and functional properties without compromising quality. This study aimed to evaluate the effects of substituting wheat flour with basil, oregano, or rosemary powders at 2.5%, 5%, and 7.5% on the quality of dry pasta.

METHOD

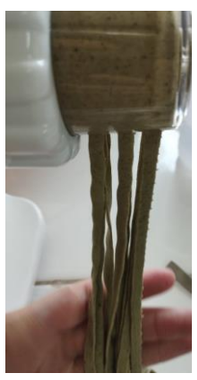
Basil (***Ocimum basilicum***)

Oregano (***Origanum vulgare***)

Rosemary (***Rosmarinus officinalis***)

Aromatic powder

Wheat flour type 000



BPP: ***Basil powder pasta***
OPP: ***Oregano powder pasta***
RPP: ***Rosemary powder pasta***

Substitution levels: 2.5% - 5% - 7.5%

Pasta Cooking Properties

Optimal cooking time (OTC)
Water absorption (WA)
Swelling index (SI)
Cooking loss (CL)

Cooked Pasta Textural Analysis

Color of Cooked Pasta

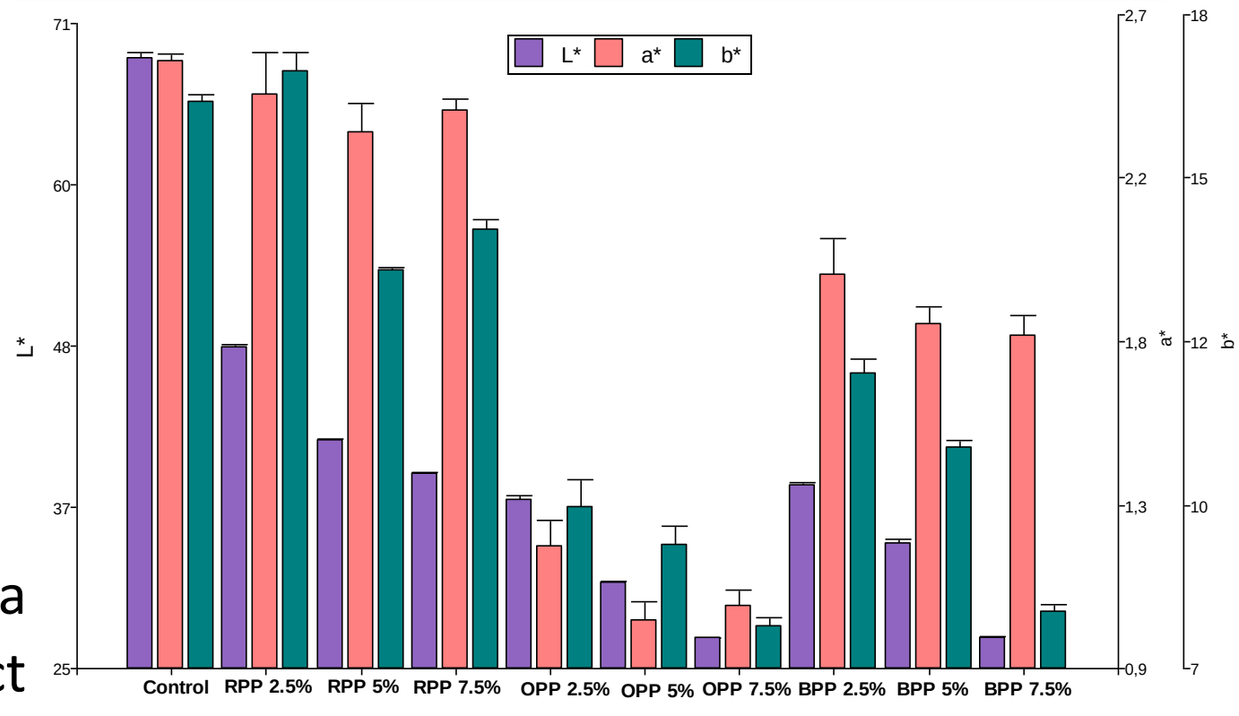
RESULTS & DISCUSSION

	OCT	CL %	WA (%)	SI	Firmness	Chewiness
Control	8 a	6.69 a	116.59 a	1.81 b	12.86 a	3.93 a
BPP 2.5	7 a	5.49 a	130.56 a	1.43 a	28.62 c	11.46 d
BPP 5	7 a	5.72 a	131.64 a	1.55 b	30.10 c	12.43 d
BPP 7.5	6 a	7.15 a	142.71 b	1.74 b	27.10 c	11.39 d
RPP 2.5	11 b	6.90 a	157.29 b	1.60 b	12.19 a	5.92 b
RPP 5	12 b	8.30 b	165.86 b	1.30 a	23.82 b	7.84 c
RPP 7.5	14 c	9.44 b	170.21 b	1.44 a	13.37 a	4.33 a
OPP 2.5	9 b	5.91 a	146.12 b	1.68 b	24.77 b	9.76 c
OPP 5	10 b	7.52 a	149.40 b	1.76 b	24.82 b	11.23 d
OPP 7.5	11 b	10.85 c	167.46 b	1.92 b	23.46 b	8.59 c

CL increased only in RPP (5–7.5%) and OPP (7.5%). WA values were higher in all enriched pastas, particularly in RPP, although this did not translate into greater swelling.

SI ranged from 1.30 to 1.92, with no significant differences among most formulations highlighting that despite the higher WA reported in some formulations (attributed to their higher fiber content), the pasta did not undergo structural deformation during cooking.

BPP and OPP at all substitution levels showed higher texture values compared to the control pasta. Chewiness increased at moderate herb levels but declined at higher concentrations, likely due to disruption of the protein-starch matrix



Color analysis revealed decreased L* and b* values due to green pigments of herbs used. OPP7.5% was the darkest sample

CONCLUSION

The inclusion of aromatic herb powders in pasta formulations did not significantly affect technological quality up to 2.5% substitution. Basil-containing pastas exhibited the most favorable technological performance across all levels.