

THE ADDITION OF MIXED GREEN BANANA PULP AND PEEL FLOURS INCREASES THE RESISTANT STARCH CONTENT OF LEMON ZEST BISCUITS

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INTRODUCTION & AIM



Growing demand for healthy and sustainable foods

Unconventional flours → mixed flours made from banana pulp and peel

These flours are notable for their functional compounds, especially **RESISTANT STARCH**

➤ This study aimed to evaluate the effect of adding of the mixed green banana pulp and peel flours in the proportion of 90:10 (M1) and 80:20 (M2) (pulp: peel), on the starch digestibility of biscuits with lemon zest biscuits.

METHOD

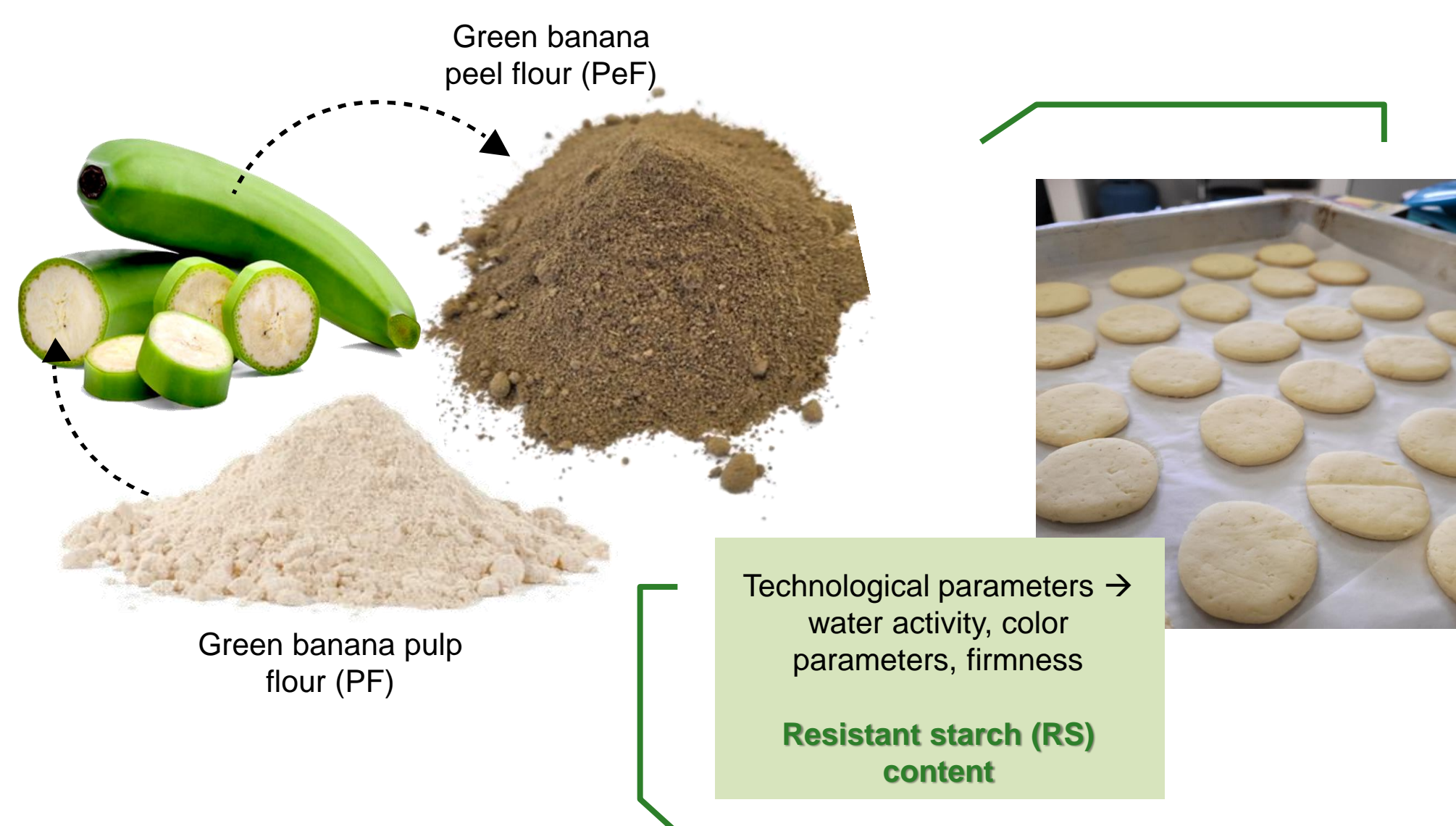


Table 1. Biscuit formulations.

Ingredients (%)	FC	F80PF	F90PF	F100PF
Corn starch (CS)	100	50	50	50
Pulp flour	-	-	-	50
M2	-	50	-	-
M1	-	-	50	-
Refined sugar	36	36	36	36
Unsalted margarine	40	40	40	40
Coconut milk	10	10	10	10
Egg yolk	10	10	10	10
Lemon juice	10	10	10	10
Lemon zest	2	2	2	2
Salt	1	1	1	1

Green banana pulp flour (PF); FC: biscuit control, prepared with 100% CS; FM1: biscuit prepared with 50% CS and 50% of mixed green banana pulp and peel flours in the proportion of 90:10 (M1) (pulp:peel); FM2: biscuit prepared with 50% CS and 50% of mixed green banana pulp and peel flours in the proportion of 80:10 (M2) (pulp:peel); F100PF: biscuit prepared with 50% CS and 50% of green banana pulp flour.

RESULTS & DISCUSSION

Table 2. Characterization of gluten-free cookies.

	Formulations			
	FC	F80PF	F90PF	F100PF
Weight loss (%)	14.50±0.65 ^a	13.92±0.37 ^a	14.49±0.30 ^a	13.50±0.50 ^a
Luminosity (L*)	74.38±0.20 ^a	60.84±0.74 ^c	57.31±0.14 ^d	64.67±0.20 ^b
Water activity	0.53±0.002 ^b	0.60±0.00 ^a	0.49±0.018 ^c	0.52±0.003 ^b
Firmness (N)	0.83±0.29 ^c	6.23±2.85 ^b	9.81±2.29 ^a	5.79±1.23 ^b
Specific volume (cm ³ /g)	1.08±0.52 ^a	0.82±0.23 ^a	0.82±0.23 ^a	1.26±0.49 ^a
Resistant starch (RS)	0.98±0.05 ^b	5.72±0.95 ^a	4.25±0.65 ^a	5.86±1.55 ^a

FC: biscuit control, prepared with 100% CS; FM1: biscuit prepared with 50% CS and 50% of mixed green banana pulp and peel flours in the proportion of 90:10 (M1) (pulp:peel); FM2: biscuit prepared with 50% CS and 50% of mixed green banana pulp and peel flours in the proportion of 80:10 (M2) (pulp:peel); F100PF: biscuit prepared with 50% CS and 50% of green banana pulp flour.

*Means followed by the same letter in the columns do not differ at 5% probability by the Tukey test.

• Formulations F80PF, F90PF and F100PF showed a significant increase in firmness, while the luminosity parameter (L*) of the biscuits decreased as the proportion of PeF was increased.

• No significant differences were observed in the weight loss and specific volume of the biscuits.

• It was also observed that the F100PF (5.86%), F80PF (5.72%), and F90PF (4.75%) formulations showed nearly **FIVE TIMES HIGHER** resistant starch content compared to the control formulation (0.98%).

CONCLUSION

These results suggest that mixed green banana flour can be an excellent alternative for producing biscuits, rich in dietary fiber, antioxidants and resistant starch, contributing to a more balanced and functional diet.

FUTURE WORK / REFERENCES

Viana, L. M., Rodrigues, F. S. R., Santos, M. C. B., dos Santos Lima, A., Nabeshima, E. H., de Oliveira Leite, M., ... & de Barros, F. A. R. Green banana (*Musa ssp.*) mixed pulp and peel flour: A new ingredient with interesting bioactive, nutritional, and technological properties for food applications. *Food Chemistry*, 2024.

ACKNOWLEDGEMENTS

