

Effect of mixed green banana pulp and peel flour on physicochemical and sensory properties and resistant starch content of chocolate cookies

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INTRODUCTION & AIM

Mixed green banana pulp and peel flour (BPPF) is a potential ingredient to be used in the development of healthy foods, since the green banana pulp flour is rich in resistant starch (RS) and the peel flour has high concentrations of antioxidants, minerals and other dietary fibers. The objective of this study was to characterize chocolate cookies containing BPPF (at the ratio of 80:20 pulp:peel).

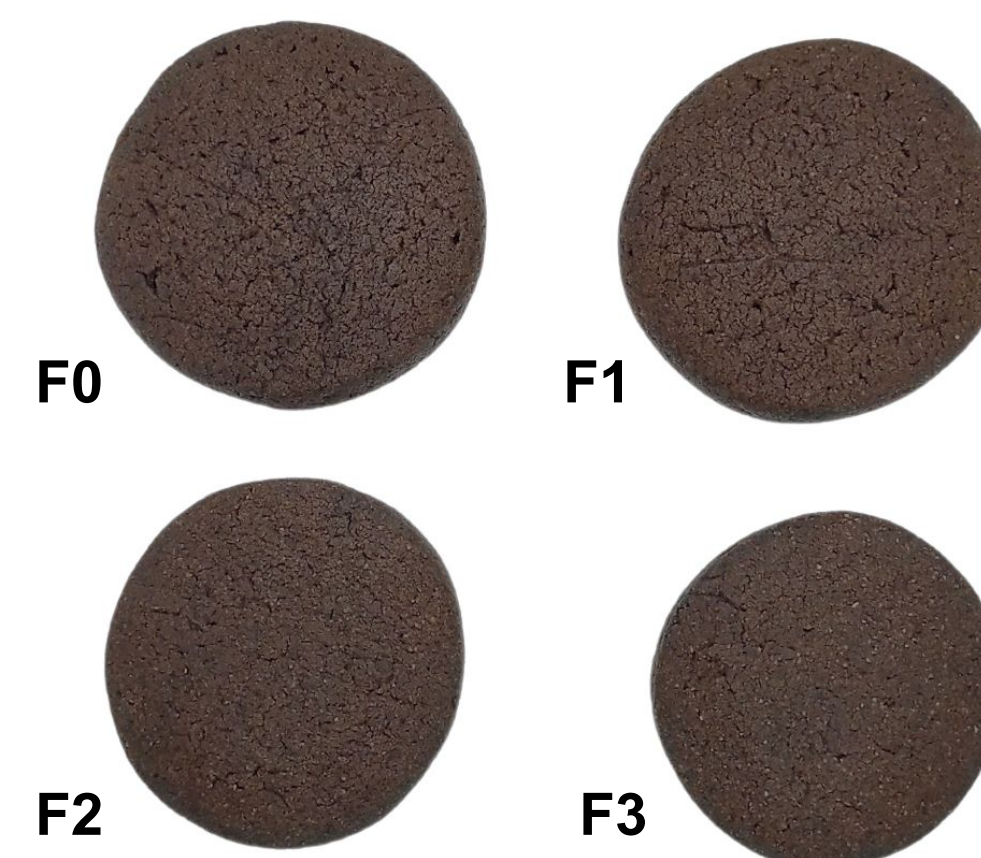


Image 1. From left to right: F0 and F1, on the top; F2 and F3, on the bottom.

METHOD

Four formulations were developed with different levels of BPPF in substitution of refined wheat flour (F0: 0%, F1: 23.3%, F2: 46.7% and F3: 70%), in addition to butter, brown sugar, refined sugar, baking powder, baking soda and egg. Physicochemical properties and resistant starch content were determined, and a sensory evaluation was done through a focus group. The results were submitted to ANOVA, and to Tukey's Test ($p < 0.05$).

RESULTS & DISCUSSION

The data obtained through the analyses can be seen in Table 1. There were no differences in specific volume, moisture content and color (based on delta E values), among treatments. Significant differences were observed in RS content among the four formulations, where F3 had the highest concentration, which was about seven times higher compared to control. The addition of BPPF affected the texture of the cookies. Regarding sensory properties, F1 had the highest overall acceptance, followed by F0. Color and aroma attributes had the highest scores, while crunchiness was suggested to be improved.

Sample	Weight loss (%)	Final Thickness (cm)	Specific Volume (mL/g)	Aw	Resistant Starch "wet base" (g/100g)	Moisture (%)	Firmness (N)	Color (Delta E)
F0	5,88 ± 0,31	1,27 ± 0,02	1,16 ± 0,19	0,74 ± 0,00	0,74 ± 0,03	11,27 ± 0,04	4,47 ± 0,23	-
F1	5,40 ± 0,26	1,36 ± 0,01	1,13 ± 0,18	0,73 ± 0,00	3,55 ± 0,08	11,35 ± 0,21	5,73 ± 0,62	0,90 ± 0,34
F2	4,09 ± 0,05	1,37 ± 0,06	1,03 ± 0,00	0,75 ± 0,00	4,55 ± 0,27	12,15 ± 0,07	5,93 ± 0,43	0,43 ± 0,25
F3	3,57 ± 0,25	1,42 ± 0,05	1,24 ± 0,19	0,75 ± 0,00	4,93 ± 0,66	12,16 ± 0,52	7,10 ± 0,60	0,44 ± 0,15

Table 1. Compilation of analysis results

CONCLUSION

Thus, the addition of BPPF showed potential to improve nutritional value of chocolate cookies, suggesting it to be an effective alternative flour to increase RS content in foods.

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