



INFOGRAPHIC

KHẢO SÁT ẢNH HƯỞNG CỦA TỶ LỆ TINH BỘT KHÁNG RS5 TỪ ĐẬU XANH THAY THẾ BỘT MÌ ĐẾN CẤU TRÚC VÀ GIÁ TRỊ DINH DƯỠNG CỦA BÁNH QUY BƠ

Tác giả:

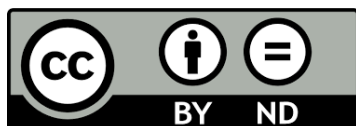
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Đơn vị:

Khoa Khoa học Ứng dụng & Công nghệ

Năm xuất bản:

2026



Khảo sát ảnh hưởng của tỷ lệ tinh bột kháng RS5 từ đậu xanh thay thế bột mì đến cấu trúc và giá trị dinh dưỡng của bánh quy bơ © 2026 bởi **Võ Thùy Dương** được cấp phép theo **CC BY-ND 4.0**.

INVESTIGATION OF THE EFFECTS OF RS5-RESISTANT STARCH FROM MUNG BEANS AS A WHEAT FLOUR SUBSTITUTE ON THE STRUCTURE AND NUTRITIONAL VALUE OF BUTTER COOKIES

SUMMARY

This study investigated the effects of substituting wheat flour with RS5-resistant starch derived from mung beans on the physicochemical properties and nutritional value of butter cookies. The substitution levels were 0%, 10%, 20%, 30%, 40%, and 50%. The results showed that replacing wheat flour with RS5 increased the resistant starch content of the cookies. Substitution levels of 20–30% were identified as suitable, providing a favorable balance between improved nutritional value and the technological and sensory characteristics typical of butter cookies.

EXPERIMENTAL DESIGN

Main Ingredients : RS5 resistant starch from mung beans

Substitution Levels : 0%, 10%, 20%, 30%, 40%, 50%

Substitution Formulations :

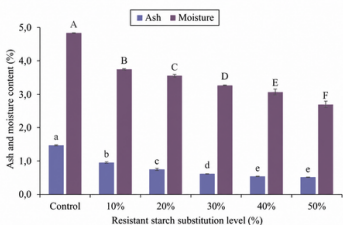
Replacement level (%)	Wheat flour (g)	RS5 (g)
0%	90	0
10%	81	9
20%	72	18
30%	63	27
40%	54	36
50%	45	45

Fixed Ingredients: Sugar, salt, baking powder, butter, milk

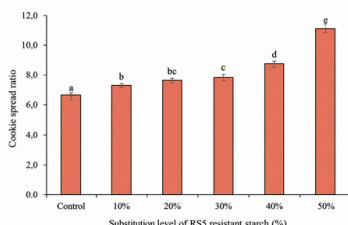
RAW MATERIALS & PRODUCTION PROCESS



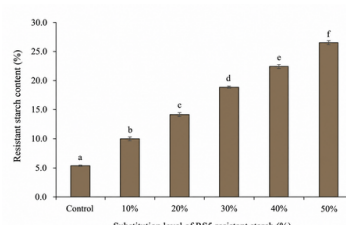
RESULTS



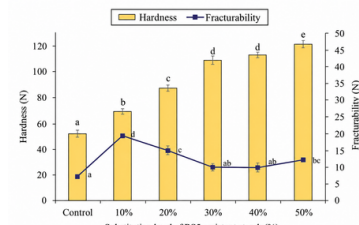
ASH AND MOISTURE CONTENT



COOKIE SPREAD RATIO

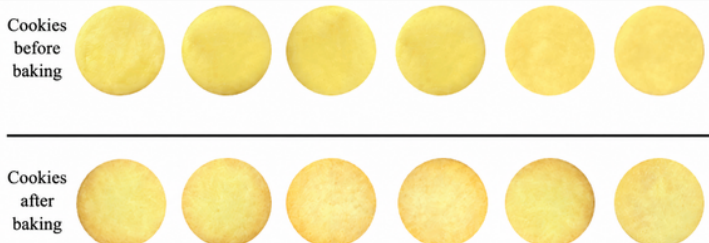


RS5 RESISTANT STARCH CONTENT OF BAKED COOKIES



ASH AND MOISTURE CONTENT

Before baking			
Sample	L*	a*	b*
Control	64.45 ± 0.74 ^a	7.58 ± 0.42 ^c	29.85 ± 1.15 ^a
M1	68.35 ± 0.21 ^b	4.86 ± 0.11 ^b	29.33 ± 1.30 ^a
M2	69.51 ± 0.42 ^b	7.29 ± 0.19 ^b	28.87 ± 0.85 ^a
M3	70.71 ± 0.20 ^c	4.85 ± 0.08 ^b	30.30 ± 1.11 ^a
M4	73.16 ± 0.23 ^d	7.06 ± 0.21 ^c	29.43 ± 1.97 ^a
M5	79.80 ± 0.16 ^e	4.14 ± 0.09 ^a	29.71 ± 0.95 ^a
After baking			
Sample	L*	a*	b*
Control	70.563 ± 1.973 ^a	6.380 ± 0.660 ^a	19.267 ± 0.401 ^a
M1	72.107 ± 0.890 ^{ab}	6.593 ± 0.370 ^a	20.700 ± 0.884 ^a
M2	77.440 ± 1.375 ^{bc}	6.547 ± 0.406 ^a	20.560 ± 1.718 ^a
M3	76.390 ± 0.330 ^{bc}	7.723 ± 0.293 ^{ab}	23.080 ± 0.214 ^{ab}
M4	78.913 ± 0.148 ^c	8.233 ± 0.294 ^{ab}	22.763 ± 2.217 ^{ab}
M5	77.725 ± 1.716 ^c	9.787 ± 1.007 ^b	26.277 ± 0.550 ^b



COLOR OF COOKIES BEFORE AND AFTER BAKING AT DIFFERENT SUBSTITUTION LEVELS (0-50%)

Parameter	Control	10%	20%	30%	40%	50%
Lipid (g/100 g DW)	21.350 ± 0.035 ^a	21.523 ± 0.016 ^b	21.887 ± 0.013 ^c	22.219 ± 0.041 ^d	22.870 ± 0.008 ^e	23.085 ± 0.002 ^f
Protein (g/100 g DW)	8.600 ± 0.017 ^f	8.236 ± 0.006 ^e	7.581 ± 0.005 ^d	7.142 ± 0.006 ^c	6.747 ± 0.026 ^b	6.362 ± 0.022 ^a
Carbohydrate (g/100 g)	66.295 ± 0.015 ^a	66.759 ± 0.021 ^b	67.329 ± 0.267 ^c	67.736 ± 0.017 ^d	67.874 ± 0.045 ^e	68.164 ± 0.080 ^e
Energy (kcal/100 g)	491.734 ± 0.411 ^a	493.686 ± 0.185 ^b	496.620 ± 1.133 ^c	499.478 ± 0.443 ^d	504.315 ± 0.241 ^e	505.873 ± 0.347 ^f

PROTEIN AND LIPID CONTENTS OF COOKIES

CONCLUSION

The substitution level significantly affected the quality attributes of butter cookies. RS5 resistant starch from mung beans showed potential as a partial substitute for wheat flour in butter cookie production. Substitution levels of 20–30% increased resistant starch content and improved nutritional value while maintaining acceptable structural and sensory characteristics. However, substitution levels above 40% tended to reduce the structural and sensory quality of the product.