

Corn Protein in Cake



Protein ingredients can be added to bakery products to aid in water and fat retention. Another benefit is protein fortification. An experiment was run to evaluate the effect of adding corn protein to a cake formula. The example compared untreated and corn protein-supplemented cake formulas.

Corn protein was produced by Cargill with at least 85 wt% corn protein (dry basis) and less than about 1.5 wt% oil (dry basis), as described in patent application WO20161544CPI. The formula could be adapted to use corn protein with a minimum of 65 wt% protein and less than 3 wt% oil (dry basis) and anticipate the same finding.

This example involves a yellow cake. Cakes with and without corn protein were prepared using the formula and process procedures listed.

FORMULA

Ingredients	Control (%)	Test (%)
Shortening	8.53	8.53
Cake Flour	22.44	12.44
Corn Protein	0.00	10.00
Granulated Sugar	26.92	26.92
Starch, PolarTex™ 12640	0.79	0.79
Non-Fat Dry Milk	2.24	2.24
Salt	0.49	0.49
Baking Powder	1.35	1.35
Vanilla	0.34	0.34
Whole Eggs	15.03	15.03
Vanilla Extract	0.34	0.34
Water	21.54	21.54
Total	100.00	100.00

PROCESSING PROCEDURE

1. Weigh shortening into Hobart mixing bowl
2. Blend dry ingredients and add into bowl
3. Mix on low speed for 30 seconds and scrape bowl and paddle
4. Combine eggs and vanilla
5. Start mixer on low and gradually add the egg mixture
6. Mix for 1 min, scrape down bowl and paddle
7. Continue mixing for 4 minutes on low speed
8. Slowly add 1/3 of the water while mixing on low (1) for 45 sec.
9. Scrape down bowl and paddle
10. Slowly add 1/3 more of the water while mixing on low (1) for 45 sec.
11. Scrape down bowl and paddle
12. Slowly add least 1/3 of the water while mixing on low (1) for 45 sec.
13. Scrape down bowl and paddle
14. Finish mixing for 2 minutes on low
15. Place 400g of batter in 8" round pans (spray sides of pan and use parchment rounds).
16. Bake 375°F for 23 minutes
17. Remove and cool completely (1+ hours) before completing any analytical or sensory evaluations

RESULTS

The treated sample had an average middle height of 27.1mm and average side height of 26.8mm. The untreated sample had an average middle height of 42.1mm and average side height of 34.1mm.



Treated yellow cake with 10% corn protein (left) and Untreated yellow cake (right).

CONCLUSION

Corn protein can be used in a formula to create a cake comparable to control without added proteins.