

Corn Protein in Muffins



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 impact of adding corn protein to a muffin formula. The experiment was compared with a control muffin made without corn protein.

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.

An example involves a lemon poppy seed muffin. Muffins with and without the addition of corn protein were prepared using the formula and process procedures listed. The corn protein replaced wheat flour in this example.

FORMULA

Ingredients	Control (%)	Test (%)
Oil	15.92	15.92
Egg, Whole	10.61	10.61
Invert Sugar	3.18	3.18
Almond Flavor	1.96	1.96
Powdered Sugar	14.33	14.33
Granulated Sugar	4.78	4.78
Non Fat Dry Milk	0.53	0.53
Lecithin	0.48	0.48
Salt	0.53	0.53
Bread Flour	15.92	9.92
Bleached Pastry Flour	10.61	6.61
Corn Protein	0	10.00
Baking Soda	0.32	0.32
Sodium Aluminum Phosphate	0.37	0.37
Softase 4040	0.05	0.05
Starch, PolarTex™ 12640	1.33	1.33
Water	6.90	6.90
Water	10.08	10.08
Poppy Seeds	2.12	2.12
Total	100.01	100.01

PROCESSING PROCEDURE

1. Add dry ingredients, powdered sugar, granulated sugar, nonfat dry milk, and salt to oil, egg, invert sugar, almond flavor, lecithin and salt in Hobart mixer
2. Mix 1 minute on low speed
3. Add remaining dry ingredients to mixture and slowly add 6.9% portion of water
4. Mix 1 minute on low speed and 3 minutes on medium
5. Add remaining water to mixture and mix 3 minutes on low speed
6. Add poppy seeds to the mixture and mix 30 seconds on low speed
7. Use a #20 scoop to fill muffin liners. Bake at 375°F for 20 minutes

RESULTS

The test and control sample were similar in height and crumb appearance. The average height for the test was 219mm with the control being 223mm. As shown in the photo, the color of the test was more brown-yellow in color than the control muffin.



Test Lemon poppy seed muffin with corn protein (left) and Control Lemon poppy seed muffin (right).

CONCLUSION

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