

# Corn Protein in Chocolate Chip Cookie



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 into a chocolate chip cookie formula. The experiment compared a control and test chocolate chip cookie formula.

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.

One example involves a chocolate chip cookie. Chocolate chip cookies with and without the addition of corn protein were prepared using the formula and process procedures listed (corn protein displaced flour).

## FORMULA

Ingredients	Control (%)	Test (%)
Pastry Flour	14.64	9.64
Cake Flour	14.64	9.64
Cane Sugar, Granulated	22.77	22.77
Whole Eggs	5.53	5.53
Shortening	14.64	14.64
Vanilla Extract	0.52	0.52
Salt	0.39	0.39
Baking Soda	0.52	0.52
High Fructose Corn Syrup (HFCS)	4.56	4.56
Molasses	0.32	0.32
Chocolate Chips	21.47	21.47
Corn Protein	0.00	10.00
<b>Totals</b>	<b>100.00</b>	<b>100.00</b>

## PROCESSING PROCEDURE

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1. Weigh out shortening, sugar, salt and soda into mixing bowl
2. Cream together on medium speed (Speed 2 on a Hobart) for 2 minutes
3. Add eggs, HFCS, water, molasses and vanilla
4. Mix on low speed for 1 minute, then increase to medium speed for 30 seconds
5. Combine flours and add to mixing bowl
6. Mix on low speed for 1 minute, then medium speed for 30 seconds\*
7. Add chips and mix on low speed for 30 seconds
8. Use a #30 scoop (approx. 26g) to form dough balls
9. Place on baking sheet and bake at 375°F in a reel oven for 13-14 minutes

## RESULTS

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The width, thickness and spread were measured for the test and control cookies. The test cookies had an average width of 230mm, thickness of 104mm and spread of 22.1mm. The control cookies had an average width of 330.25mm, thickness of 60mm and spread factor of 55.05mm.



*Chocolate chip cookie with 10% corn protein (left) and Control chocolate chip cookie (right).*

## CONCLUSION

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Corn protein can be used in a formula to create a chocolate chip cookie, but the finished product is different from the control without added protein.

\*30 seconds of mixing on medium speed was added to the treated batch.