



baking bits

Kitchen Chemistry 101: How baking techniques work, plus tips to avoid failures from the oven.

FROM THE HOME DIGEST KITCHENS

Is cooking an art or a science? It's both really. The art of cooking is in the selection and presentation of food; the science is in the preparation. We thought it would be interesting and useful to explain some of what goes on



when we cook and bake. Over the next three issues of *Home Digest*, along with some new recipes, we'll present a few facts on basic kitchen chemistry. Pay close attention, as there may be a test at the end.

A baker's dozen of fascinating facts

1. Flour contains both starch and proteins essential for baking.
2. Two of the proteins in flour, glutenin and gliadin, form gluten when liquid is present.
3. Gluten is both moldable and elastic, and these characteristics allow dough to rise and hold the leavening gases produced by the yeast.
4. Kneading a dough makes the gluten stronger and more flexible.
5. Fat is used in cookies, cakes, muffins and pastry to coat the flour, thereby keep-

ing too much gluten from forming when liquid is added.

6. Baking soda and baking powder are chemical bases, and when mixed with an acid, such as vinegar, fruit, yogurt, sour cream or buttermilk, form the carbon diox-

ide gas that makes cakes, cookies and muffins rise.

7. Most recipes call for a balance of acid and base ingredients, and if this balance isn't there, recipes can fail.

8. Adding more baking powder than a recipe calls for will over-inflate the batter and weaken the structure of the mix, causing it to collapse.

9. Yeast is a member of the fungus family and is alive. Yeast feeds on the sugar and starch in dough, releasing carbon dioxide and alcohol as by-products.

10. Salt in bread dough slows the rate of the yeast's fermentation and allows the dough to cook properly.

11. Sugar in a batter attracts moisture away from the starch and proteins in the flour, with the result that less gluten is formed and cakes and muffins are more tender.

12. Sugar keeps a batter from setting too quickly, and gives the leavening agents time to produce the optimal amount of carbon dioxide before the batter changes from liquid to solid.

13. Sugar reacts with the amino acids in the milk and eggs in a batter, resulting in a "Malliard reaction" or browning effect.

Basic pastry recipe



(makes enough for one double crust or two pie shells)

Use cake and pastry flour since it has less protein than regular flour and will not produce as much gluten, resulting in more tender pastry.

Ingredients:

2-1/4 cups cake and pastry flour
1 tsp. salt
3/4 cup shortening
4-5 Tbsp. cold water

■ **Directions:** Combine flour and salt in bowl. Cut in shortening until mixture resembles coarse meal with some larger pieces. Fine crumbs make pastry tender, larger pieces make it flaky. Add water, one tablespoon at a time, and stir with fork to make dough hold together. Dough should not be sticky. Press together into a ball, cut in two and roll out on floured surface.

Whole Wheat Irish Soda Bread

This rustic bread is a great addition to a soup and salad supper.

Preheat oven to 350°F.

Ingredients:

2 cups all-purpose flour
2 cups whole wheat flour
1/4 cup sugar
1 Tbsp. baking powder

1 tsp. baking soda
1-1/2 tsp. salt
1/4 cup butter
2 eggs
1-3/4 cups buttermilk
1 cup currants
2 tsp. caraway seeds



■ **Directions:** Combine flour, sugar, baking powder, baking soda and salt, and mix thoroughly. Cut in butter until mixture resembles fine meal. Stir in currants and caraway seeds. Beat eggs and buttermilk in small bowl and add to dry ingredients all at once, stirring with a fork to make a soft dough. Knead on a lightly floured surface about 10 times. Form into ball, place on greased baking sheet and flatten into 8-in. round. Cut large "X" 1/4-in. deep on top of loaf and bake for 1 hour or until brown and loaf sounds hollow when tapped on the bottom. Serve warm.

Orange-Cranberry Muffins

This recipe makes a dozen yummy muffins.

Preheat oven to 400°F.

Ingredients:

2 cups whole wheat flour
2 tsp. baking powder
1/2 tsp. baking soda
1/4 tsp. salt
1 egg, beaten
1/4 cup vegetable oil
1-1/2 cups orange juice
1 Tbsp. grated orange zest
1/2 cup dried cranberries



■ **Directions:** Combine flour, baking powder, baking soda and salt in large bowl. In small bowl, mix egg, oil, juice and zest and then add them to dry ingredients, stirring the mixture until flour is just moistened. Mix in cranberries and spoon batter into greased muffin cups. Bake for 20 minutes. 🌿