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Waxy Corn

In Puddings, Muffins

By BELLE LOWE

TAPIOCA PUDDING became mostly a "thing of the past" when the Japanese captured the East Indies. About 93 to 97 percent of our tapioca before the war came from the East Indies with the remainder from Brazil and the Dominican Republic.

We needed tapioca, not so much because we couldn't get along without tapioca pudding as because we needed the tapioca starch for many industrial uses.

So with the war need for this kind of starch, plant breeders of the United States took the problem in hand and we now are producing a similar starch from waxy maize and waxy sorghum. Iowa is growing a considerable portion of the 15,000 acres of waxy corn which is being produced this year in the Midwest, so we Iowans are especially interested in its starch.

If the starch from waxy corn was similar to that from tapioca for industrial uses, we wondered whether it might not also take the place of tapioca in cooking.

Accordingly some of our students in foods here at Iowa State College have done some testing and comparing of the puddings and muffins made from waxy corn products with those similarly made from tapioca and with those made from regular corn products.

The waxy starch products which we used were not modified or treated and so the results which we obtained may not be similar to those which homemakers will obtain from the commercial waxy products when they are finally put on the market. They are not available at this time but some corn products companies are preparing to introduce certain ones.

Tests With Puddings

One student, Bonnie Kurtz, made some tests with starch puddings, using a regular commercial cornstarch, a commercial waxy starch and a waxy starch prepared by an alkali method.

The consistency of the puddings was determined by scores, penetrometer (a mechanical device which measures the resistance to penetration with a needle) and line spread. Experimental conditions were alike.

These tests showed the waxy starches less desirable for puddings than the regular cornstarch. The puddings from waxy starch were thin and gummy. The flavor scores for the regular cornstarch puddings averaged 9.6 (10 being the highest score). The waxy cornstarch and the waxy cornstarch prepared by the alkali method produced scores of 2.0 and 4.2 in comparison with the 9.6 score for the regular cornstarch.

So we conclude that for plain or chocolate cornstarch puddings, the regular cornstarch is preferable to the waxy starches.

Another student, Esther Dil-saver, compared tapioca, regular cornmeal, waxy cornmeal (40-mesh), and for a few tests fine (60-mesh) waxy cornmeal in two types of pudding, cream type (containing milk and eggs) and fruit type. In these tests, the waxy cornmeal seemed to be as desirable as tapioca for use in either of these types of puddings.

Apricots, cherries, orange juice, crushed pineapple and peaches were used in the fruit type puddings. The other type was made exactly the same except milk and eggs were substituted for the fruit.

The ingredients (starch, sugar, salt and liquid—with the exception of eggs) were weighed, combined and cooked 20 minutes in the upper part of a double boiler. Although the differences were small, the moisture loss for the waxy cornmeal was consistently less than from the regular cornmeal or the tapioca puddings.

The yellow color of the cornmeal (most of the waxy maize grown at present is yellow) was undesirable with cherries but was attractive in cream puddings or with yellow-colored fruit.

The puddings made from regular cornmeal were rated (by both the Foods and Chemistry staffs) below the puddings made from tapioca in both flavor and consistency. They were somewhat gritty and remained so, even if cooked a longer time. In contrast, the puddings made from waxy cornmeal rated practically the same in flavor and higher in consistency than puddings made from tapioca.

The addition of fruit decreased the stiffness of puddings made with all three starches. The viscosity was decreased more with the cherries (a sour, pie type) than with the other fruits.

Cornmeal in Muffins

A regular cornmeal and two waxy cornmeals, one coarse (30-40-mesh) and one fine (50-60-mesh), were used in muffins by a student, Shirley Like. The proportions of the ingredients were: 1 cup cornmeal, 1 cup all-purpose flour, 1 cup milk, one egg, 2 tablespoons of sugar, 2 tablespoons of corn oil, 3 teaspoons of baking powder and ½ teaspoon of salt.

The coarse cornmeal imparted a grittier texture than the fine meal. The waxy cornmeals produced a slightly moister muffin than the regular cornmeal. In all other respects the two types of cornmeal could be used interchangeably with practically the same results. The scores for texture and tenderness were the same for both waxy and regular cornmeals and there was little difference in the scores for flavor.