

What are the differences and similarities between the sponge cake and the G noise recipe used to make the two Boston Cr me Pies?

A recipe details: the type and amounts of ingredients used; the sequence and manipulation of the ingredients and the baking preparation: how the pan was prepared; the rack positioned in the oven and the baking temperature and time. Both recipes, in this example, use the same baking preparation, ingredients and their amounts; except, the sponge cake uses a bit of cream of tartar to ensure the stability of the egg whites.

The sequence and manipulation of the ingredients in the two recipes, however, differ and produce two slightly different cake textures. The sponge cake recipe is damp, dense, rubbery and spongy textured cake, whereas the G noise cake, in comparison, is more delicate, drier, airy, yet spongy textured cake. Why?

Looking at the pictures, you can't tell much of a difference; however, you can with the actual cakes in front of you.



Sponge cake



G noise cake

Cake Recipe Formulation, without trying to sound too technical, is a science. Every ingredient going into a cake has its own properties or characteristics. When all of the ingredients are combined, they form one element: batter. When heat is applied to the element, during baking, they share (blend) and/or take away properties from one another and their characteristics and properties change to produce a new element with a distinct structure: a cake. One, therefore, needs to know or understand the properties of specific ingredients, especially eggs and flour, which contain high amounts of protein. The amounts of sugar, type of fat and leavening agents, milk, salt and water, as well as baking temperature, must also be taken into consideration when formulating a cake recipe, because they too have specific functions in the texture of the cake; otherwise, the recipe will go off balance.

Protein is one of the most important compound chemicals in cakes. It's present in every cake in the form of eggs or flour. Protein provides the structure (foundation) of the cake; otherwise, the cake would collapse, because nothing would bind the ingredients together. You can have a cake made without eggs or flour, or both eggs and flour, which is most typical. In any case, when the proteins in the batter are being baked (heated in the oven) to a specific temperature, they coagulate around, encapsulating and trapping the air (created through aeration or formed by a leavening agent) within the bubbles of the batter and create the protein strands of the "web" to form the structure and texture of the cake.

Looking at the two recipes, we can see that the ingredients and their amounts, and preparation were constant. If, however, we look at the equation below, the only variables were: how the ingredients were sequenced and how they were manipulated, with specific reference how the eggs and sugar were sequenced and manipulated:

The sponge recipe:

[(eggs + sugar ^{75%} + lemon zest + vanilla + salt) <-- mixed in (milk + flour)] <-- folded into (egg whites + sugar ^{25%} + tartar)

all ingredients are mixed at room temperature

The Génoise recipe:

(eggs + sugar^{93.75%} + lemon zest + vanilla + salt)

Mixed while heated to 110°F.
then mixed and being cooled to room temperature

<-- folded into (flour+sugar^{6.25%}mixture + milk)

room temperature

We can say that one can change the texture of a cake, depending on the how the ingredients are sequenced and manipulated.

Aki Kitchen