Maillard, the Duck?

Have you ever heard of Maillard the Duck? No? Well, perhaps that is because Maillard isn't a duck at all! Louis Camille Maillard was a French biochemist who identified the process of what happens when proteins brown.

Oh, that's easy? You say. Carmelization, right? Well, not really. When a sugar browns, yes it is due to carmelization, however, when sugars combine with starches, this is called the Maillard Reaction.

Basically what happens when heat is applied to a sugar-starch-protein combination, a part of the sugar molecule reacts with an amino acid group in the protein molecule. This reaction produces a series of chemical reactions that cause browning.

As a part of the reaction, the heat also causes starches to break down into sugars and thus some of the confusion that would make one think that the browning of meats is from carmelization. The following recipe demonstrates how the Maillard reaction quite nicely:

Emma's Roasted Chicken

Chef Jack Schoop
via Andrews 228

1	chicken, whole
1	tablespoon salt and pepper
1	onion -- cut in 1/2" cubes
1	carrot -- cut in 1/2" cubes
1	celery stalk -- cut in 1/2" cubes
1	clove garlic
1	sprig sage
1	sprig thyme
1	sprig rosemary
2	cups chicken stock
1	ounce butter

In a large roasting pan, place onions, carrots, celery, garlic and herbs in the bottom.

Rinse chickens and season cavities with salt and pepper.

Remove wings at first joint. Truss chickens.

Rub chickens with butter. Sprinkle with salt and pepper.

Place chickens on side in pan. Bake 15 minutes at 425.

Roast on the other side for another 15 minutes at 425.

Roast breast side up for 15 minutes at 425.

Lower heat to 375 and roast breast side down until done 5-15 minutes.

Remove from pan and allow to cool.

Untie cooled chicken and cut chickens in half.

Remove all bones except for wing and leg bones.

Make a gravy from the veggies in the pan.

Reheat to order.

Per Serving (excluding unknown items): 605 Calories; 47g Fat (70.7% calories from fat); 36g Protein; 7g Carbohydrate; 2g Dietary Fiber; 157mg Cholesterol; 2357mg Sodium. Exchanges: 0 Grain(Starch); 5 Lean Meat; 1 Vegetable; 6 Fat.

As you cook the chicken, each time you turn it in the recipe you will notice that the chicken is starting to brown. This is evidence of the Maillard reaction. Also, as you baste the chicken, you will also see evidence of browning in the pan due to the Maillard reaction.

Simply put, sugars brown through carmelization. Sugar, starch and/or protein combinations brown due to the Maillard reaction. So, no ducks here.