



Maillard, Caramelization, and Enzymatic

BROWNING REACTION



Which would you prefer to eat?

Both chicken were cooked to a safe temp

- chicken on the left was pan fried
- the chicken on the right was boiled.





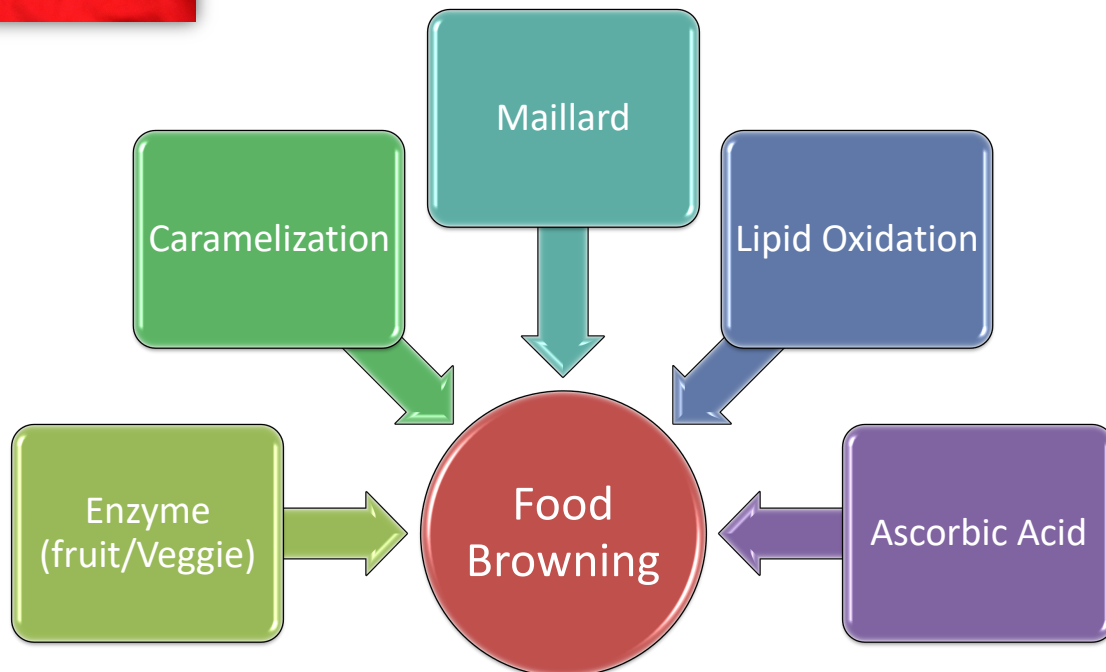
Most important chemical reactions that impacts taste.

Browning Reactions.

- set of chemical **reactions**
- tend to make cooked food have a **brown** color.
- make food more attractive and better tasting

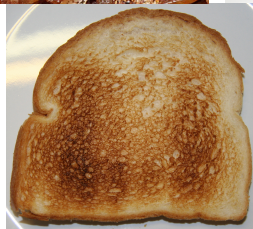


Browning Reactions





The Maillard reaction is responsible for most browning in cooking



Maillard reactions - responsible for the browning of many foods including meat, the brown color on a loaf of bread, coffee beans and “caramelized” onions.



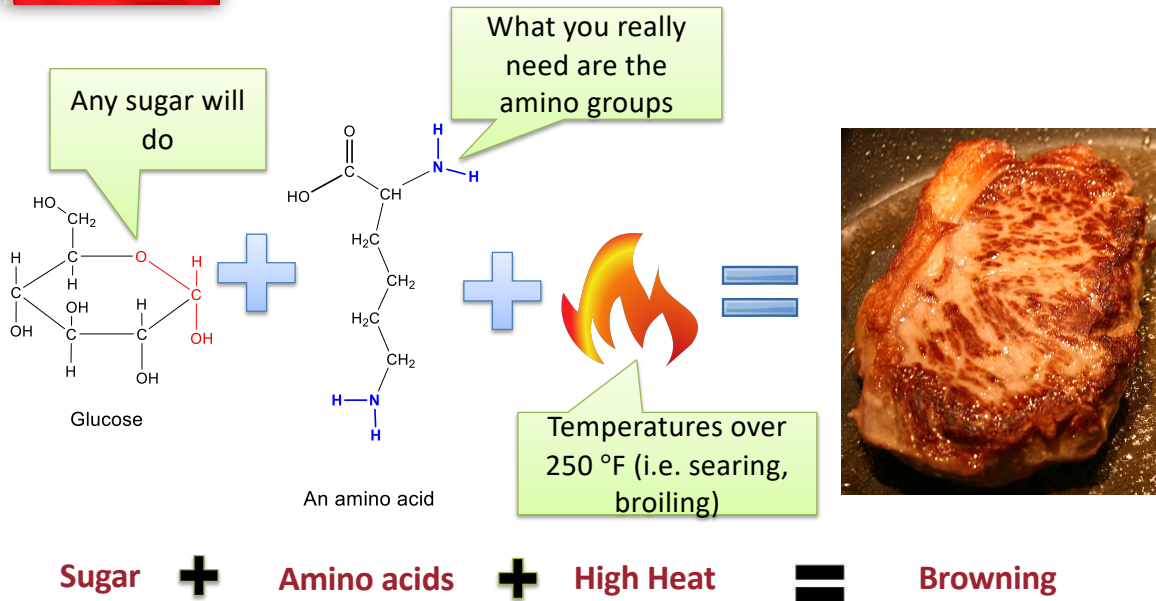
The Maillard Reaction

- Reaction between **sugars and amino acids** in the presence of high heat
- NOT the same as burning – that just turns food to **charcoal**

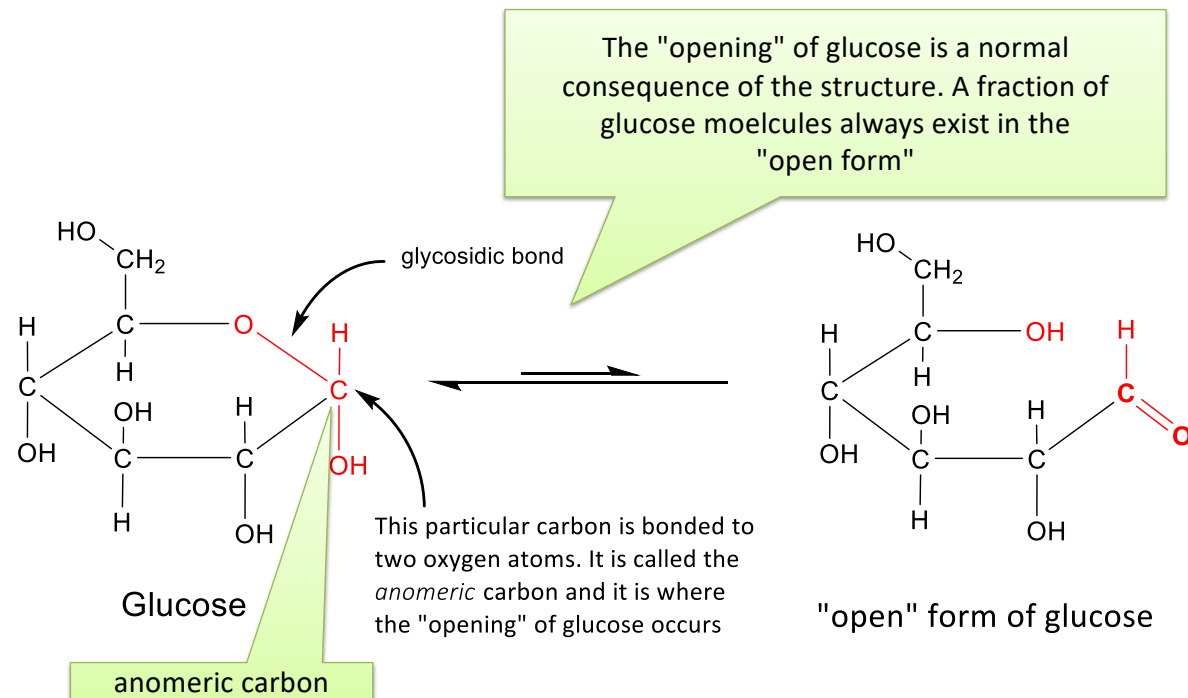




Maillard Browning

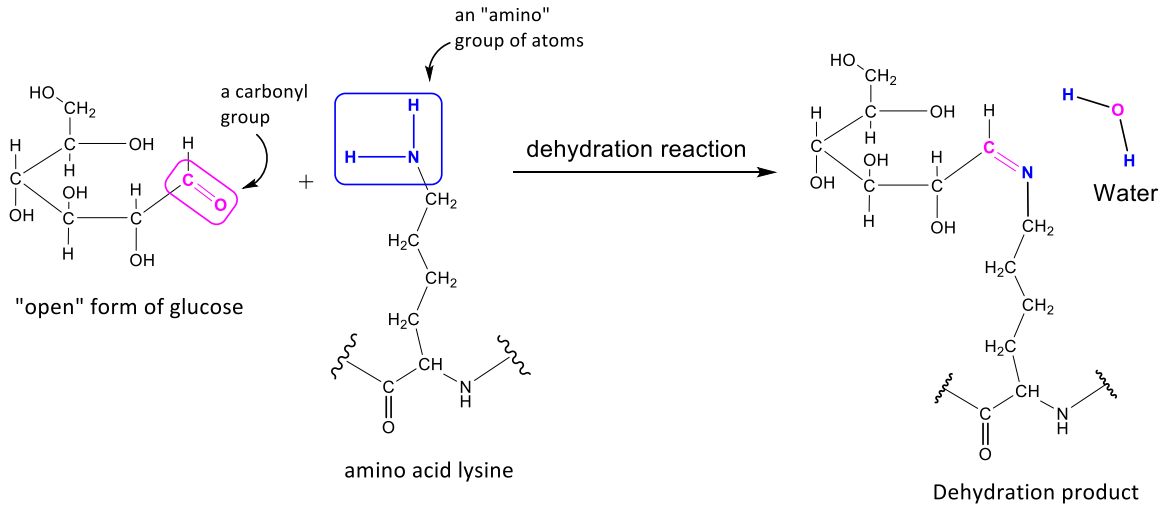


How does Maillard browning work? Step 1 – Glucose “opens”

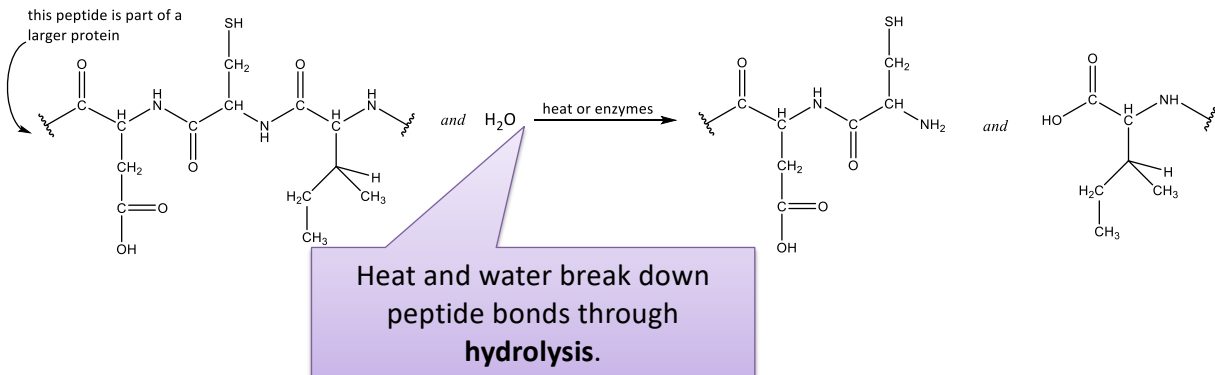




How does Maillard browning work? Step 2 - Dehydration



When meat is cooked, protein breaks down, as shown below.



The degraded protein is able to undergo a Maillard reaction with glucose released from the breakdown of muscle glycogen.

Glycogen is a polymer of glucose (i.e. "animal starch")