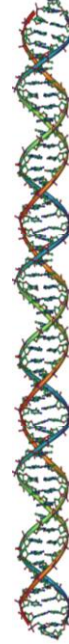


“Browning”

Different meaning in different foods



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Browning Reactions

Many foods “brown”

Reactions differ by molecules



Images: <http://theculinarybutler.blogspot.com/2010/09/how-to-bake-freezing-bread-baking-bread.ht>
<http://www.davidlebovitz.com/2011/06/chili-recipe-with-chocolate/>
<http://www.frenchrevolutionfood.com/2010/09/franglais-maple-brown-sugar-creme-brulee/>
<http://openwalls.com/image?id=22369>
<http://blog.friendseat.com/how-to-make-hot-chocolate/>



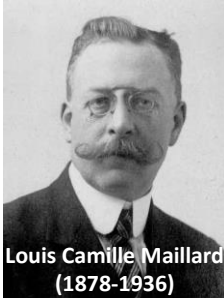
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Maillard Browning

Proteins (+ reducing sugars)

Produce color and flavors

250°F/120°C



Louis Camille Maillard
(1878-1936)



Images: <http://www.telegraph.co.uk/foodanddrink/8426388/White-bread-falls-from-favour-as-shoppers-prefer-brown.html>
<http://www.food-info.net/uk/colour/maillard.htm>



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Encouraging Maillard

High heat, little water

Browning before stewing

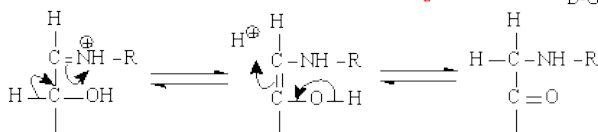
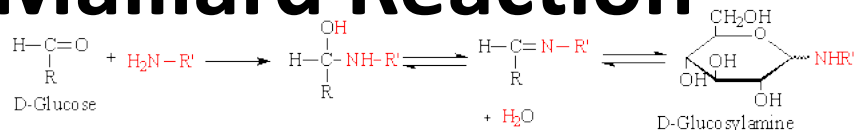


Images: http://wellfed.typepad.com/well_fed/2005/12/mahogany_beef_s.html
<http://www.onceuponachef.com/2012/09/roasted-tomato-salsa.html>

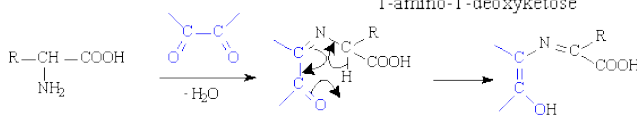


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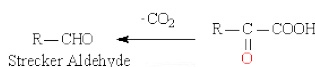
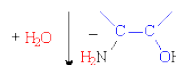
Maillard Reaction



1-amino-1-deoxyketose



Images: <http://www.chm.bris.ac.uk/webprojects2002/rakotomalala/maillard.htm>



Strecker Aldehyde



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Sugar Browning

Sugar pyrolyzes (burns)

Flavor development

Caramelization

330°F/165°C



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Enzymatic Browning

Phenol oxidase

Polymerizes phenols

Usually undesirable

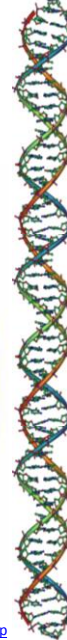
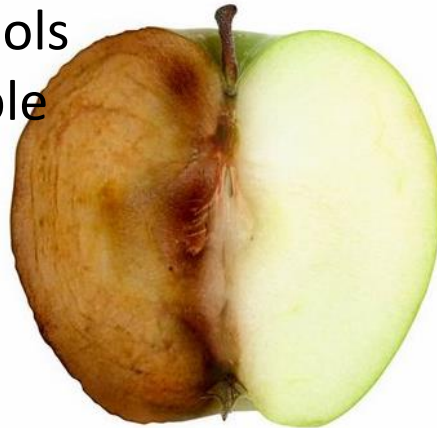


Image: <http://www.oneresult.com/articles/nutrition/what-are-antioxidants-and-how-do-they-help>



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Enz Brown

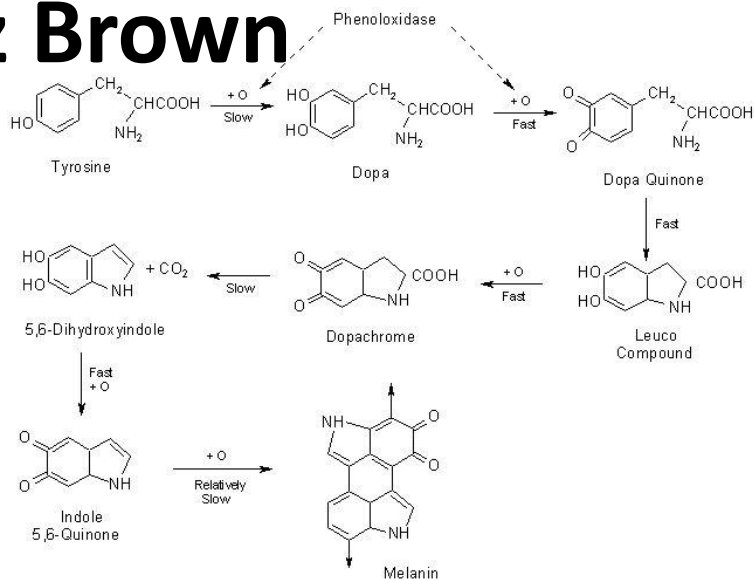


Image: <http://www.food-info.net/uk/colour/enzymaticbrowning.htm>



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Balanced Browning

Control heat

Sugar browning @ higher Temp

Control water

Keeps Temp low



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