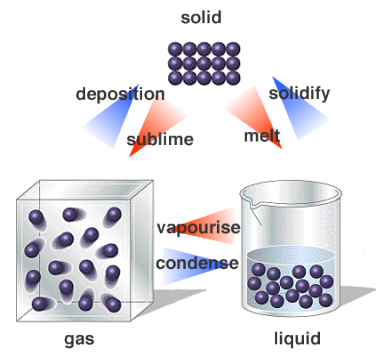


Four Basic Food Molecules

I. Water – smallest and simplest food molecule

A. Water and Heat

1. Ice

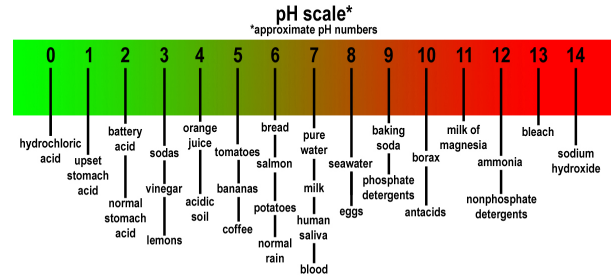


2. Water

3. Steam

B. pH Scale

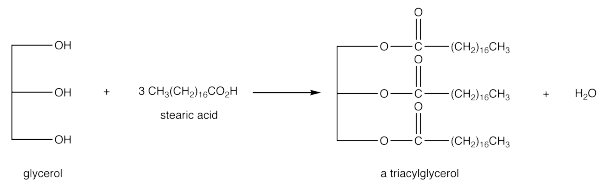
1. Acids and Bases



2. pH is a measure of H_3O^+

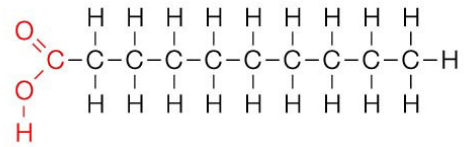
II. Fats, oils and lipids – essential to cooking and provide the majority of flavor when cooking

A. Glycerol/fatty acids

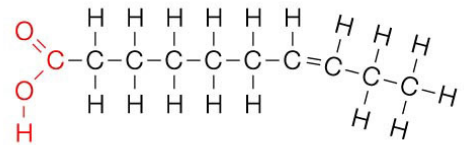


B. Saturated/Unsaturated fats

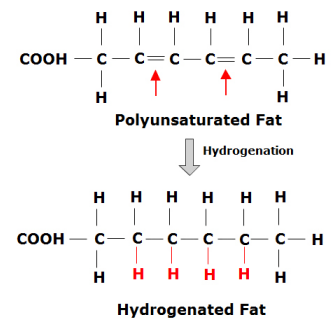
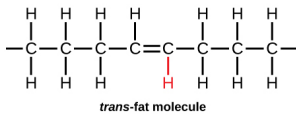
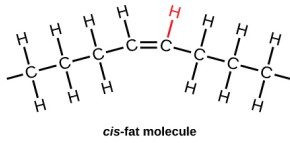
Saturated



Unsaturated



C. Hydrogenation and trans fatty acids



D. Fats and heat

E. Emulsifiers

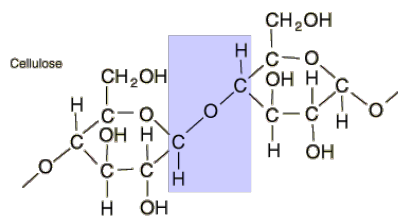
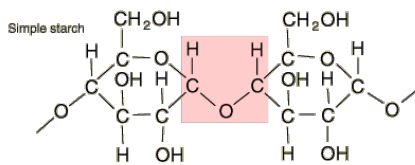


III. Carbohydrates – made exclusively of carbon, hydrogen and oxygen

A. Sugar

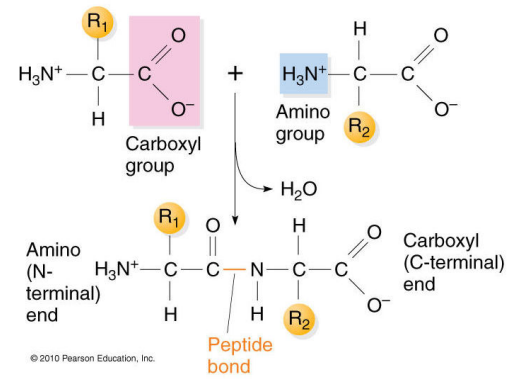


B. Oligosaccharide/polysaccharides

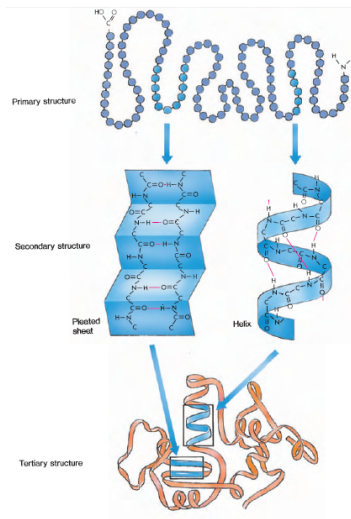


IV. Proteins – major part of food molecules and are also the most complex.

A. Amino acids and peptides

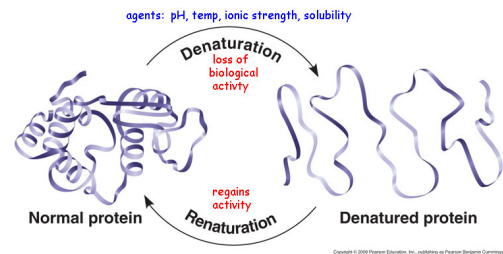


B. Protein structure



C. Protein in water

D. Protein denaturation



E. Enzymes

Greg Tucker, (1996) "Biotechnology and enzymes in the food industry", British Food Journal, Vol. 98 Iss: 4/5, pp.14 - 19

Table I

Major uses of enzymes for food processing

Enzyme	Use
Amylases and amyloglucosidase	Production of fermentable sugars in baking and brewing Starch liquification Fruit juice clarification
Cellulase	Fruit liquification Solubilization of pentosan in baking
Pectinases	Fruit juice clarification
Invertase	Hydrolysis of sucrose in confectionery Flavour development in fruit juices
Proteases	Meat tenderization Flavour and colour in juices Bread quality in baking Enhanced cheese ripening Brewing
Lipases	Foam stabilization in baking Enhanced cheese ripening
Glucose isomerase	High fructose corn syrup
Glucose oxidase	Prevention of Malliard browning reactions Bromate replacer in baking Oxygen scavenger in fruit juices