

Energy Molecules

Chapter 8



What's in food?

And what does it do for us?

Kinds of Nutrients



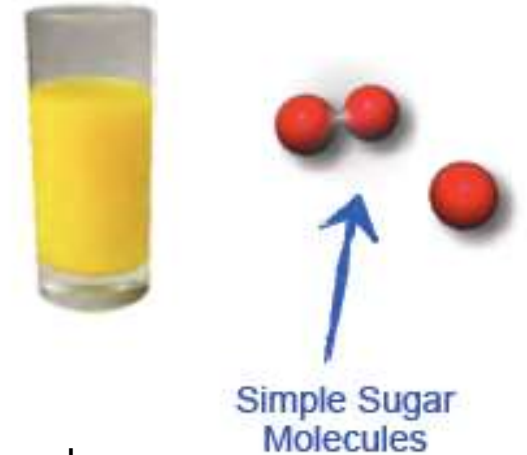
- **Vitamins** → Help eyes work
- **Proteins** → Help brain/tissues function
- **Fats** → Help bones to heal/muscles grow
- **Carbohydrates** → Give us "energy"



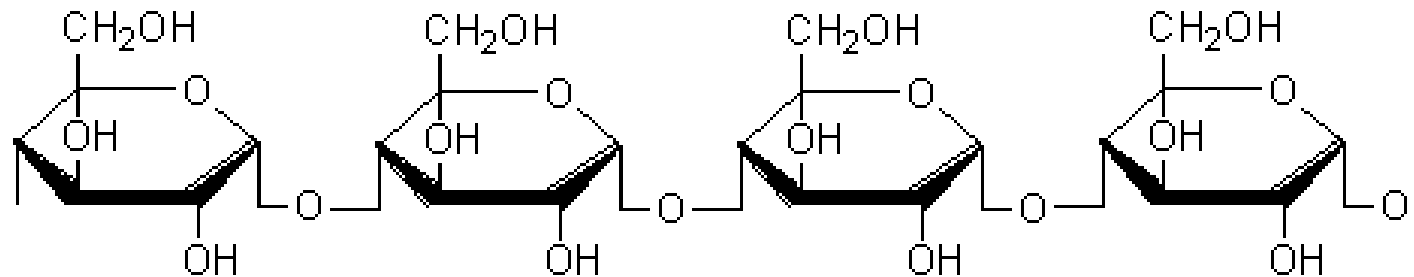


Carbohydrates

- Includes molecules that have carbon, oxygen, hydrogen
- “a combination of carbon and water”
- Simplest carbohydrates= sugars
 - Give energy
 - Taste sweet
 - Break down easily
- Milk, fruit, vegetables, cake, candy



No vitamins/minerals

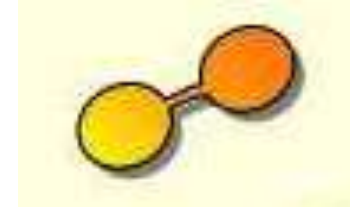


Saccharides



Monosaccharides

- Mono= single
- Saccharide= sugar



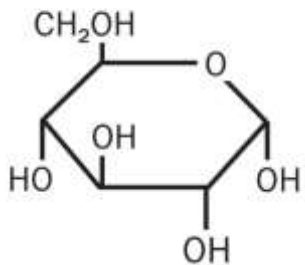
Disaccharides

- Di= two
- Saccharide= sugar

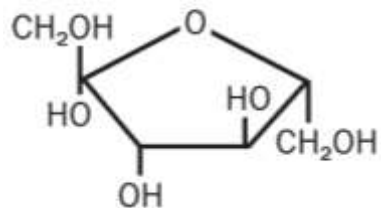
- Very simple sugars
 - Glucose
 - Fructose



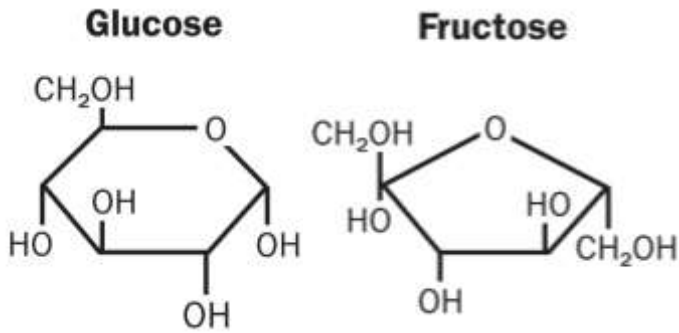
Glucose



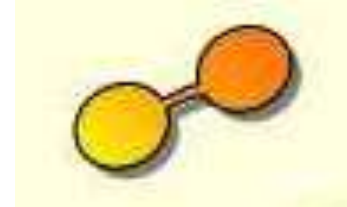
Fructose



Saccharides

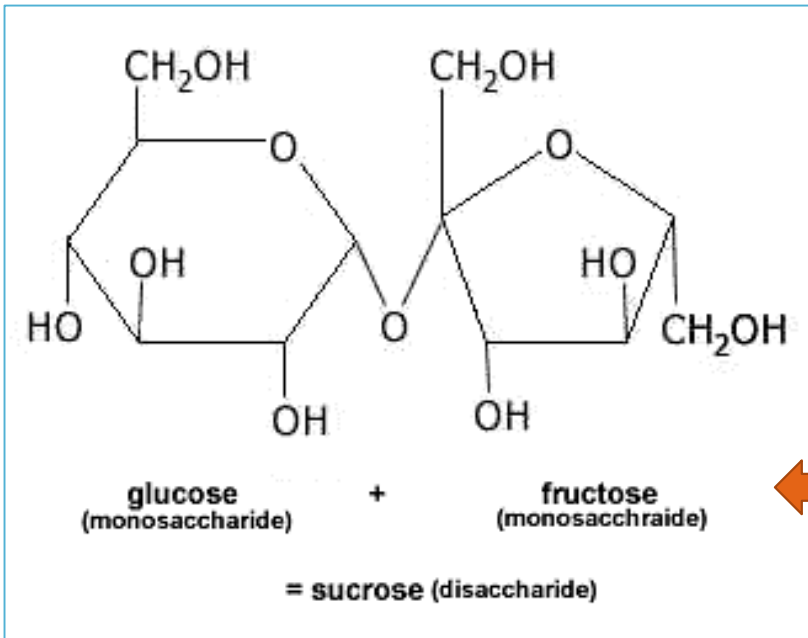


Monosaccharides



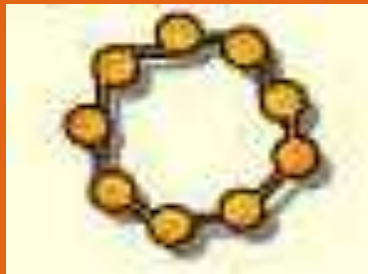
Disaccharides

- Di= two
- Saccharide= sugar
- Still simple, but bigger
 - Glucose + fructose= **Sucrose** (table sugar)



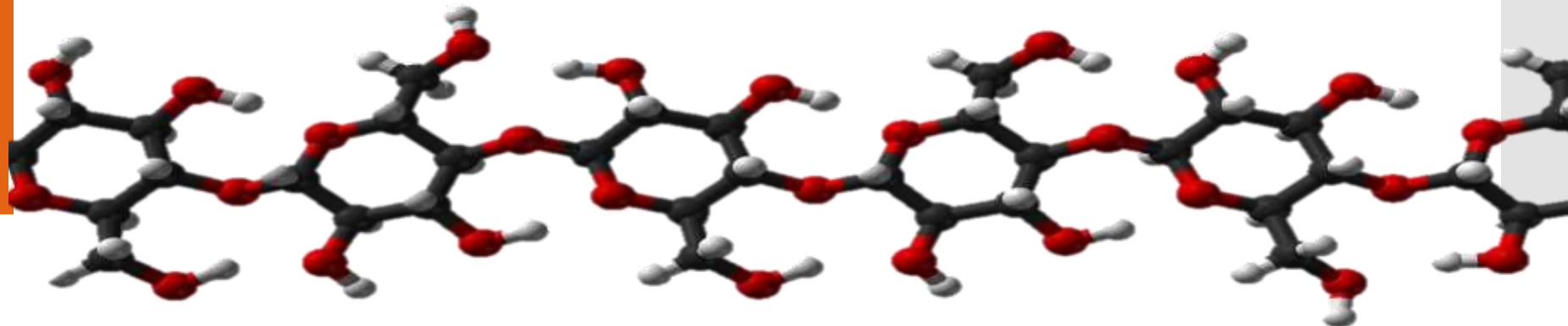
Monosaccharides put together= oligosaccharides (few sugars)

Polysaccharide

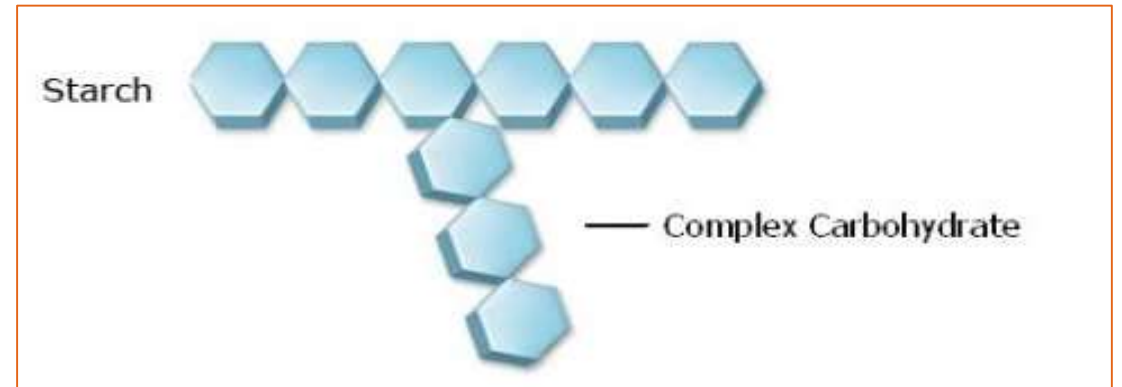
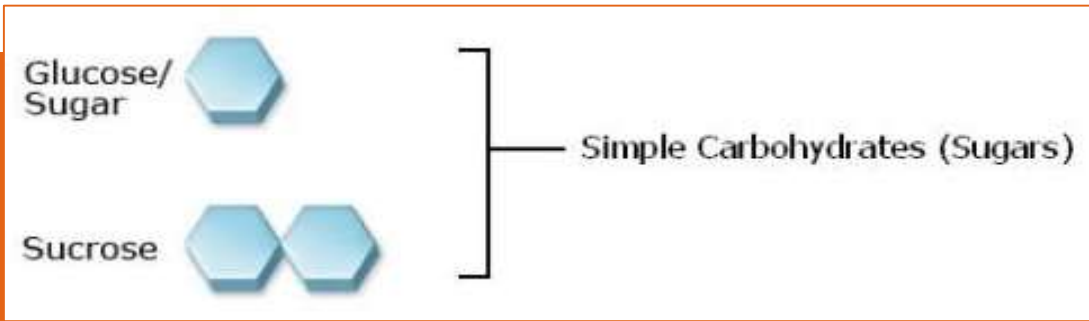


- Polysaccharide... “poly”= many, “saccharide”= ?
- 10 or more monosaccharides hooked together
- Two kinds of polysaccharides
 - Starch
 - Cellulose

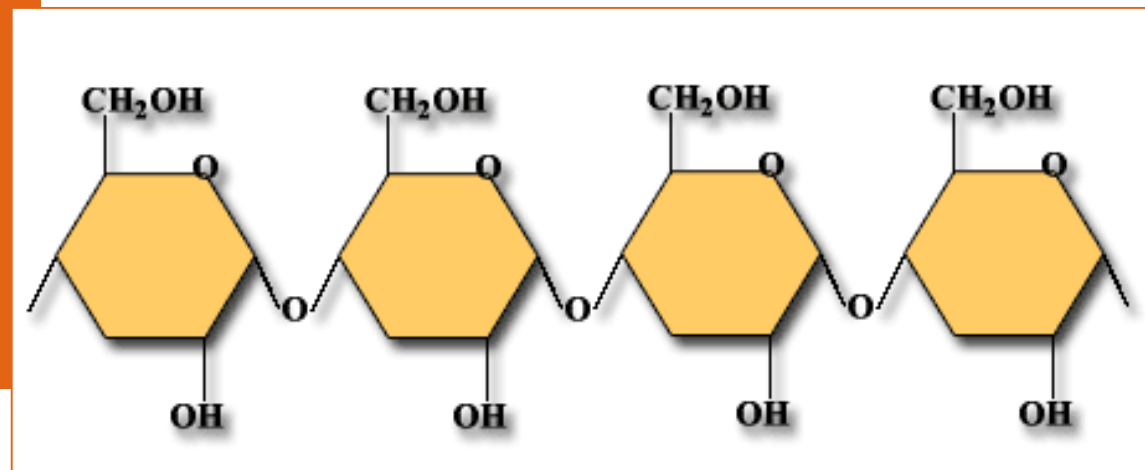
Complex Carbohydrate Molecule



Starch



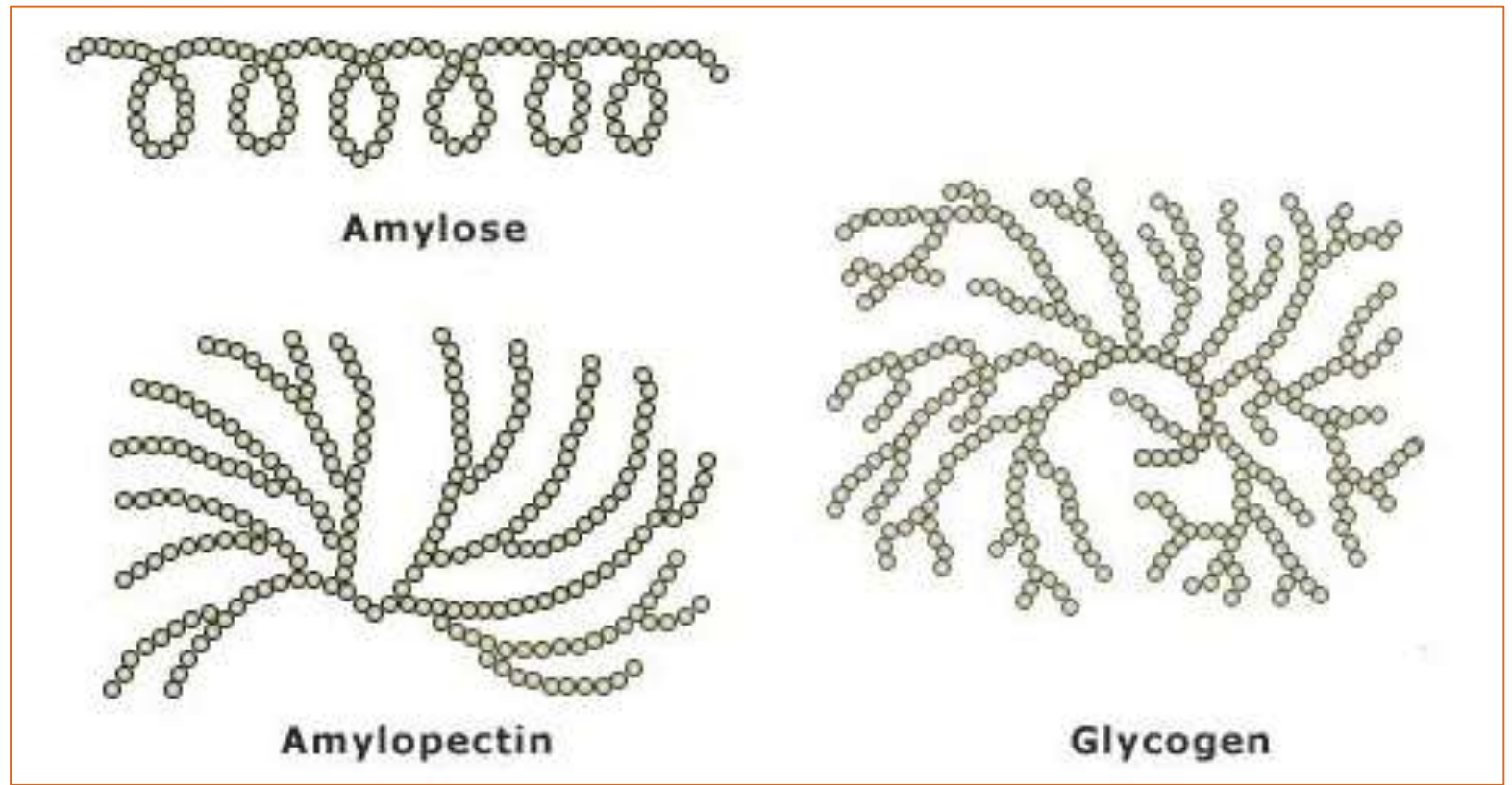
- Glucose molecules linked together into long chains
- Up to 3,000!
- Special proteins break chains up into single glucose molecules




Why not just eat simple sugars so our bodies can get energy right away?



Starch



- Glycogen= animals produce in livers, stored in muscles
- Amylose=  made by plants, stored in rice/potatoes
- Amylopectin =

Good vs. Bad Carbohydrates: Know the Difference

By PositiveMed.com

Good Carbs

More fiber, minerals & vitamins, Low glycemic index, Feel full on fewer calories



Whole-grain



Oatmeal



Green vegetables



fruits

Bad Carbs

Low fiber & nutrients, High glycemic index, Lots calories needed to make you full



Refined grains



Sugary cereals



Soda & sugary drinks



Candies & cookies

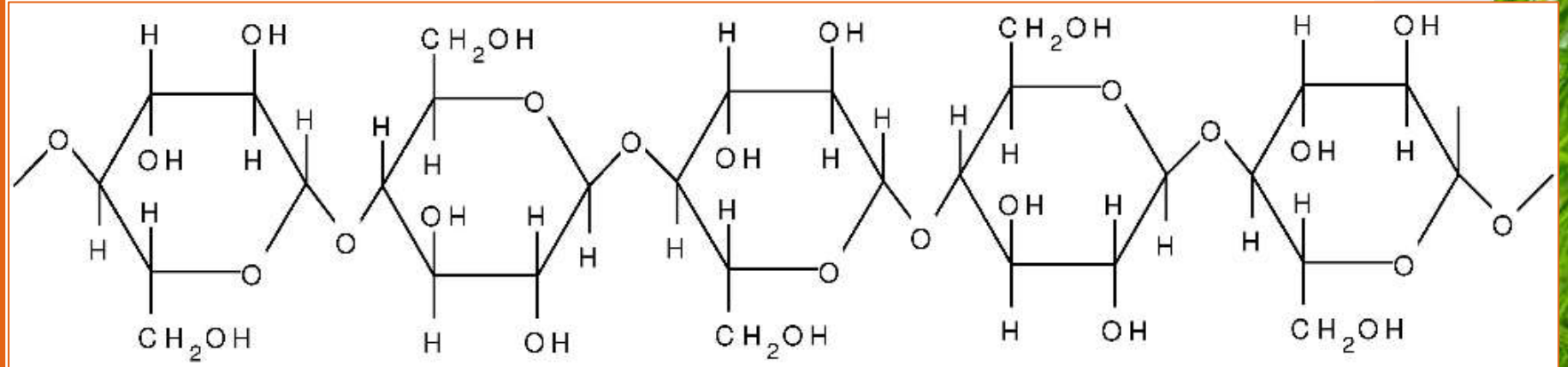


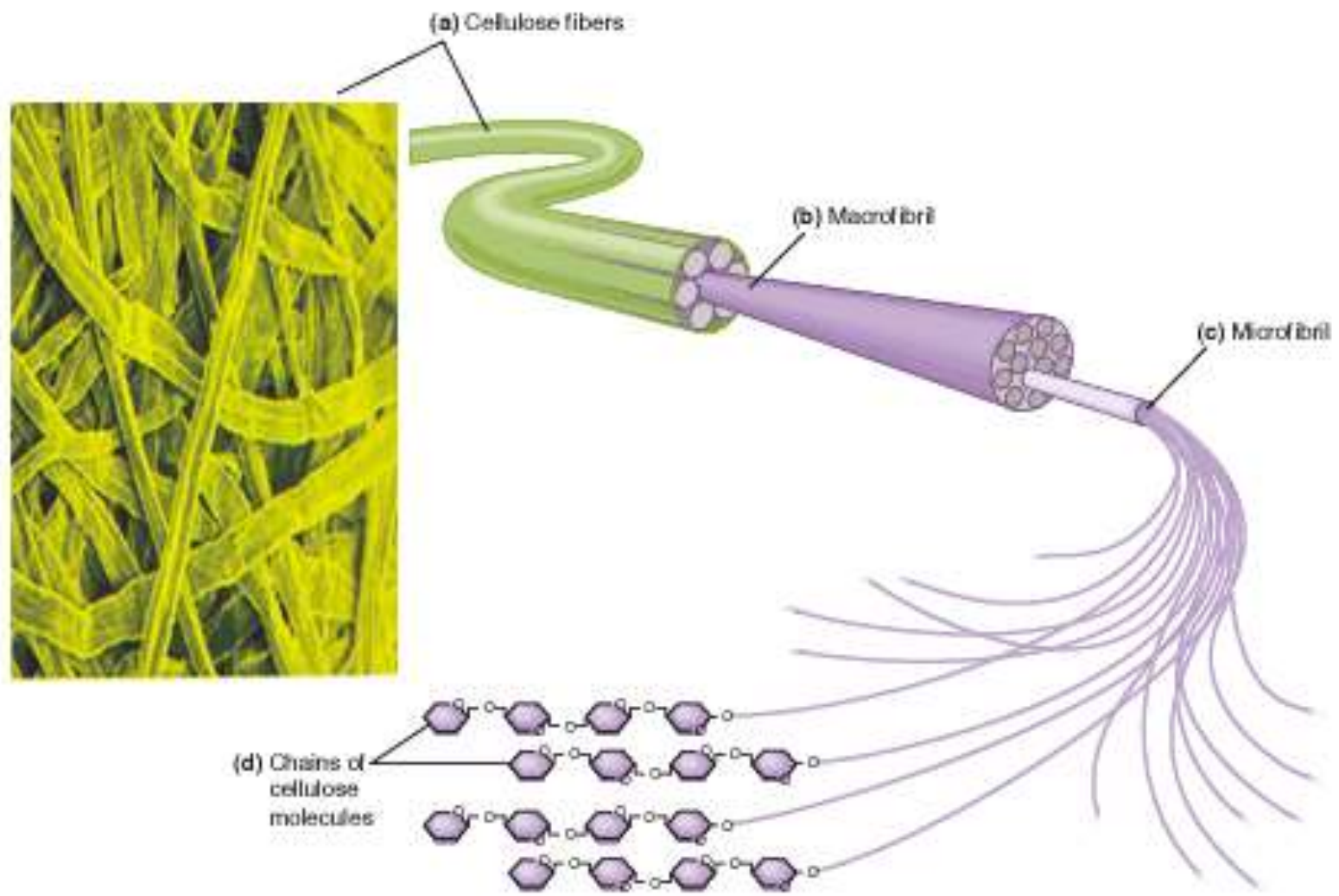
More health tips on Positive**Med**.com

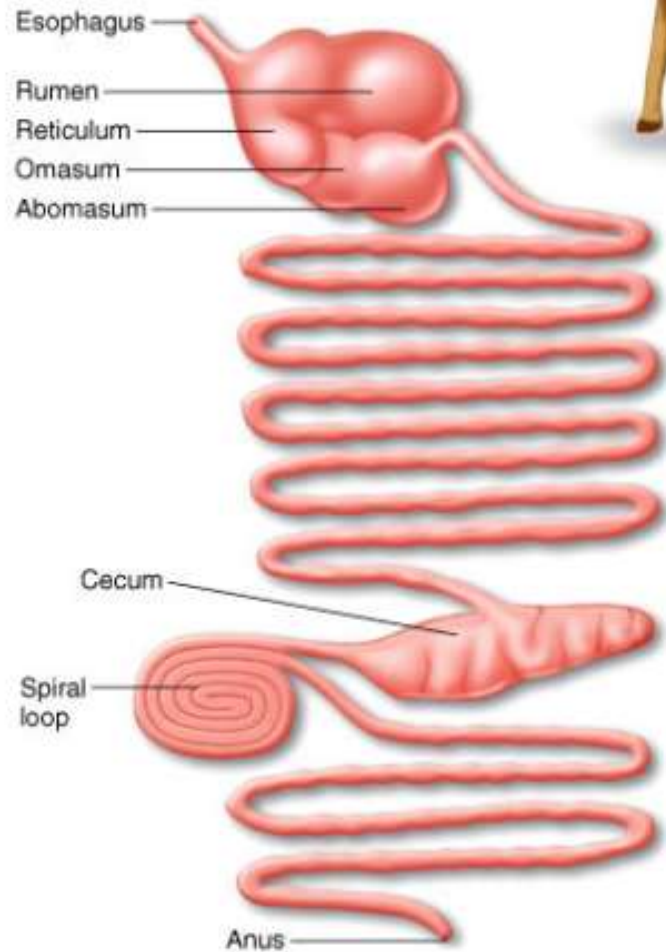


Cellulose

- **Cellulose**= wood, cotton, flax, wood pulp, plant fibers, grass
- **Almost the same as starches**, links between glucose molecules hook “up” or “down”
 - Starches= hook down
 - Cellulose= hook up

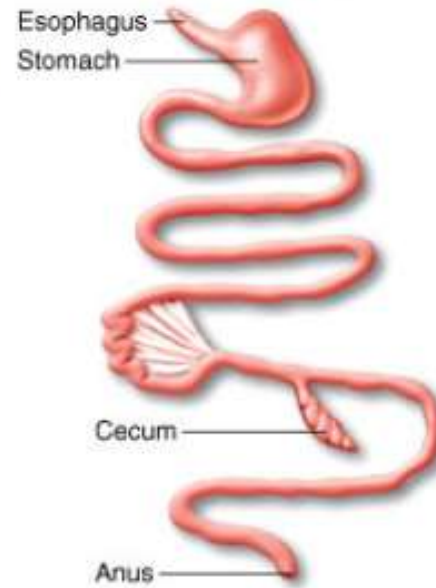






Ruminant herbivore

Four-chambered stomach with large rumen; long small and large intestine



Carnivore

Short intestine and colon, small cecum