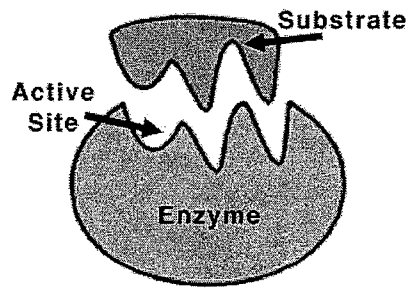


ENZYMES - BIOLOGICAL CATALYSTS



CHARACTERISTICS

- MOST enzymes are PROTEINS (Made of AMINO ACIDS)
- REQUIRED by all CHEMICAL PROCESSES in organisms (respiration, growth, photosynthesis, movement, etc.)
- They CONTROL the rate of METABOLIC (chemical reactions) in the body
- They lower ACTIVATION ENERGY (energy needed to start a reaction)
- They WEAKEN chemical bonds so molecules can be MADE or BROKEN DOWN by the body
- They act on reactants called SUBSTRATES
- They're SPECIFIC in their action - they work only on ONE type of substrate
- They're REUSABLE (NOT USED UP IN A REACTION)
- ACTIVE SITE is where the substrate TEMPORARILY fits into the active site during the metabolic reaction
- MANY have an -ASE ending
 - Sucrose (table sugar) - SUCRASE
 - Lipids (fats & oils) - LIPASE
 - Proteins - PROTEASES
 - CATALASE breaks down waste H_2O_2 made by cells
 - AMYLASE in human saliva breaks down starch (amylose)
- PRODUCED NATURALLY by ALL organisms (bacteria, protists, fungi, plants, and animals)
- GLOBULAR in SHAPE (must have the correct shape to do their job)
- DENATURATION is UNFOLDING an enzyme so its shape changes and it NO LONGER WORKS
- FACTORS that DENATURE enzymes include:
 - Change in pH (need pH7 neutral to work)
 - Extreme Temperature changes (require body temperatures to work)
 - Excess IONS such as salts

WITHOUT ENZYMES, OUR INTESTINES WOULD TAKE WEEKS TO DIGEST OUR FOOD, OUR MUSCLES, NERVES AND BONES WOULD NOT WORK PROPERLY, AND SOON DEATH WOULD RESULT!