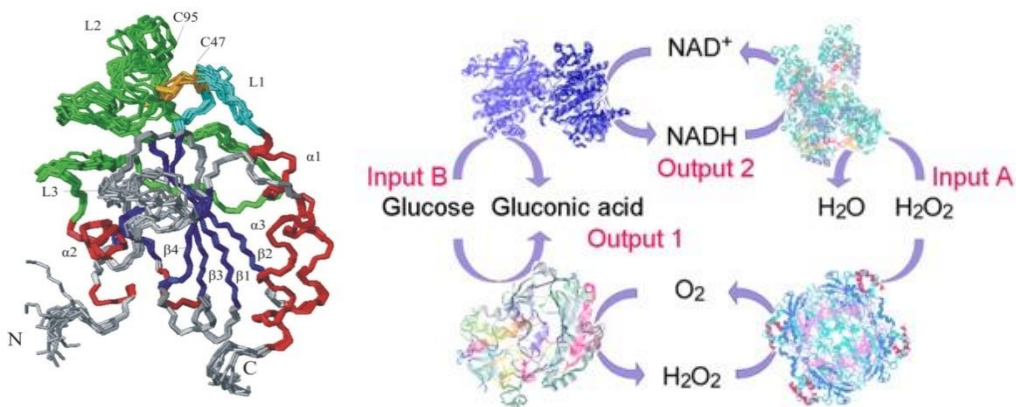
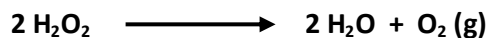


## Enzyme Activity

**Enzymes** are special protein molecules found in cells of plants and animals that make various reactions occur faster. Substances that make reactions faster are called **catalysts**. Enzymes of different types and sizes catalyze thousands of reactions in your body. Some enzymes have very specific functions and some have more general roles. Enzyme activity is closely associated with its shape or structure, and variations in temperature and pH (acidity) can cause an enzyme to lose its activity and it will not work like it should.

**Peroxidase** is an enzyme found in plants and **catalase** is one found in yeast and animal cells. These two enzymes help decompose hydrogen peroxide,  $H_2O_2$ , into water as illustrated in the diagram below. Another product produced during the enzyme action on hydrogen peroxide is oxygen gas,  $O_2$ . If a sample containing one of these enzymes is placed in a peroxide solution, you will observe bubbles of oxygen.



The enzyme called **amylase** helps break down the polysaccharide **starch** (amylose and amylopectin) into its component monosaccharide, glucose. Amylase is present in saliva (spit) and immediately starts hydrolyzing starch (amylose) as soon as food enters the mouth. This reaction is represented by the generic equation:

$$\text{Starch} + H_2O \longrightarrow \text{D-Glucose}$$

The iodine test can be used to monitor this hydrolysis reaction. If starch is present in a solution, iodine will react with it to form a purple/brown colored mixture. If no starch is present, the mixture will remain colorless.

### Procedure:

#### A. Peroxidase activity.

1. Place 1-2 mL of 3% peroxide solution into three test tubes.
2. In one test tube add 1 mL of yeast suspension and observe any changes.
3. In a second test tube, add a small piece of raw potato and note changes.
4. In the third test tube, add a small piece of cooked potato and note any change.

#### Observations.

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#### B. Amylase activity.

1. Add 2-3 mL starch solution into two test tubes.
2. Add some of your saliva (politely spit) into one of the test tubes and mix.
3. Add several drops of iodine solution to each test tube and note any differences.

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