

## Chapter 5 - Enzyme Technology

### 5.1 The Nature of Enzymes

#### A.Properties

1. catalyst
2. nontoxic
3. biodegradable
4. specificity

#### B.Source

#### C.Definition

#### D.Cofactors

#### E.Industrial uses

### 5.2 The Application of Enzymes

#### A.Historical location

1. downsides
2. amount needed

#### B.Crude enzymes

1. problem

#### C.Extracellular enzymes

#### D.Intracellular enzymes

#### E.Enzymes in detergents story

#### F.Prices

1. causes
2. result

#### G.Markets

#### H.Amounts

1. bulk
  - a. source
2. diagnostic

### 5.3 Selection and Development of Producer Strains for Enzyme Production

#### A.Screening & selection

#### B.Improvements

1. past - Random mutations
2. now - Protein engineering

##### 1)define

##### a. steps

3. objectives Table 5-6

##### 4. when done

##### a. preproduction

##### b. post production

### 5.4 The Technology of Enzyme Production

#### A.Source

1. reasons

#### B.Goals

##### a. constituent mutants

#### C.Uses

1. substrates
2. production

#### D.Forms

#### E.Safe product goals

#### F.Safety testing Table 5.7

## 5.5 Immobilized enzymes

A.Soluble enzymes

B.Immobilization

1. process Table 5.8

a. physical

b. chemical

2. advantages Table 5.9

C.Present industrial processes/products

D.Diagnostic use

E.Enzyme electrodes