

**UNIT V**

**PARENTERALS**

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# INTRODUCTION

- ❖ The administration of drugs through the patient by injection under through one or more layer of the skin or mucous membrane.
- ❖ The term parenteral derives from the greek word
  1. Para (outside )
  2. Enteron (Intestine)
- ❖ It denotes that route of administration other than oral route.

# ADVANTAGES

- It provides rapid onset of action
- It provides immediate therapeutic action
- It can be administered accurate dose.
- It can be given to patients who cannot take oral medication.
- It minimize the first pass effect.
- It provides more bioavailability

## DISADVANTAGE

- It should be administered aseptically
- It produces pain at the site of injection
- The administration of drug through wrong route may prove fatal effect
- Self administration is not possible
- If pyrogenic preparations lead to very harmful effect.

# ROUTES OF ADMINISTRATION

- Intra Muscular (IM)
- Intra dermal (ID)
- Intravenous (IV)
- Subcutaneous / Hypodermic (SC)
- Intra articular
- Intra synovial
- Intra spinal
- Intrathecal
- Intrarterial
- Intra cardiac
- Intra cisternal
- Intra peritoneal
- Intraplural

# TYPES OF PARENTERALS

- ✓ Powder for injection -Eg. Cefuroxime for injection
- ✓ Colloidal solution - Eg. Iron dextran
- ✓ Injectable emulsion-Eg. Propofol USP
- ✓ Injectable suspension –Eg. Methylprednisolone acetate
- ✓ Oily injection (solution)-Eg. Dimercaprol injection.
- ✓ Infusion fluid

# PREFORMULATION FACTORS:

It is study about physical & chemical properties of drug substance prior formulation is called as preformulation.

They are

pH

Solubility

pka

Dissociation constant

Compatibility studies- FTIR / DSC

Oxidation & reduction

particle size

# FORMULATION OF PARENTERALS

## 1. Solutes

## 2. Added substance

- ❖ Antimicrobial agent
- ❖ Buffers
- ❖ Antioxidants
- ❖ Tonicity agent
- ❖ Cryoprotectant
- ❖ Suspending agent
- ❖ Emulsifying agent

## 3. Vehicle

Aqueous -WFI

Non- aqueous Eg. arachis oil



# GENERAL PROCEDURE

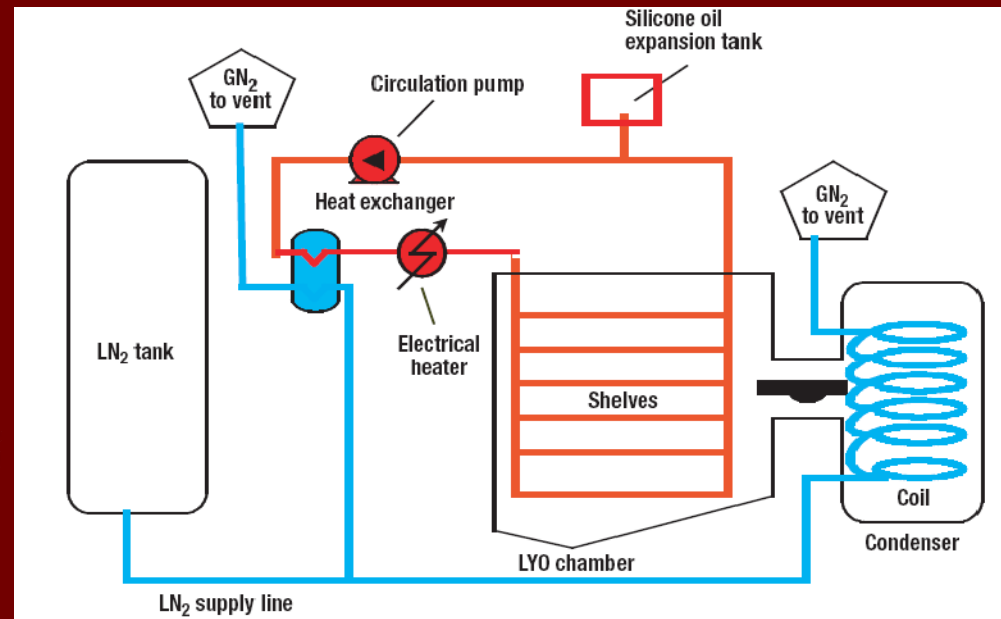
- Cleaning & washing of container ,closures
- Preparation of solutions
- Sterilizaation (Filtration)
- Filling
- Packaging

# LYOPHILIZATION TECHNIQUES

- ✓ It is a process of removal of solvent from the product or substances is called as lyophilization.

- ✓ It consist of three steps

Freezing  
Primary drying  
Secondary drying



# CRITERIA FOR PARENTERALS

- ✓ Sterility
- ✓ Pyrogen
- ✓ Isotonicity
- ✓ Stability
- ✓ Ph
- ✓ Osmotic pressure

# CONTAINERS & CLOSURES

1.Glass

2.Plastic

Ampoules( single dose )

Vials( multiple dose)

Cartridges

Automatic injector

3.Rubber closure with aluminium caps

Small volume parenterals: less than 100ml

Large volume parenterals : more than 100ml

# EVALUATION TEST FOR PARENTERALS

- ✓ Test for pyrogen
- ✓ Sterility testing
- ✓ Rabbit test
- ✓ Clarity test
- ✓ LAL test
- ✓ Leaker test

**THANK YOU**