

**Extraction:**

Extraction is a separation process consisting in the separation of a substance from a matrix. It includes Liquid-liquid extraction, and Solid phase extraction.

Extract is a concentrated preparation of vegetable or animal drugs obtained by :

- Removable of active ingredient of the crud drug with suitable menstrum.
- Evaporation of all or nearly all the solvent.
- Adjustment of residual masses with the standard.

Extracts are more potent preparation usually between (2-6) times as potent on a weight basis as crud drug .They contain primarily the active constituents of the crud with a great portion of in active constituent and structural component of the crud drug having been removed .

The function of extraction and the most important advantages are :

1. Small amount .
2. Convent for industrial usage .
3. Physically are stable .

In the manufacture extract , percolating is employed to remove the active constituent from the drug .percolate generally being reduced in volume by distillation under reduced pressure to decrease the degree of heat and to protect the drug substance against thermal decomposition .

Final removal of solvent determined final physical character of extract .

1. Liquids ( semiliquid )without removal all menstrum.
2. Solid (pillular ) with remove all menstrum .
3. Powder remove nearly all menstrum.

Pillular and powder differ only slight amount of menstrum but differ in pharmaceutical advantage because of its physical state .

So pillular can be used in ointment and cream or what is called plastic dosage while powder can be used in preparation of other pharmaceutical preparation such as capsule and tablet .

## **Tinctuors**

Tinctuors are alcoholic or hydroalcoholic prepared from vegetable or chemical substance

They are vary according to :

- Strength of active ingredient
- Alcoholic content
- Uses of it

Percentage of alcoholic is ranging from (15-18)% . Tinctuors container must be tightly stoppered and not exposed to high temperature and many of them sensitive to light should be put in dark container .

## **Advantages:**

Ethanol is able to dissolve substances which are less soluble in water, while at the same time the water content can dissolve the substances less soluble in ethanol. One can sometimes vary the proportion of ethanol and water to produce tinctures with different characteristics due to the distinct solvent properties of these two. Tincture of calendula is commonly tintured at either 25% or 90% ethanol. The alcohol content also acts as a preservative. It is widely employed as solvent for extraction.

## **Disadvantages:**

Ethanol has a tendency to denature some organic compounds, rendering them so changed as to be ineffective. Also, extracted for highly complex aromatic components are denatured by alcohol's intrinsic cleaving action upon an aromatic's complex structure into simpler inert-

rendered compounds. A basic tenet of organic chemistry teaches that any time a biologically viable component is denatured, it will reduce or negate its prior biological viability. This fact must be considered by the clinician and/or consumer from both the standpoint of efficacy and dosage when choosing ethanol-based botanical tinctures.

Ether and propylene glycol based tinctures are not suitable for internal consumption, although they are used in preparations for external use, such as personal care cremes and ointments.

Tinctures are prepared by different ways of extractions :

### ***1/ Maceration or process M:***

Maceration or process M is occur in 3 days and some time reach to (2-3) weeks which depended on herbal consistence.

Maceration: it is the process in which plant soak in the menstrum until the cellular strength are softened and penetrated by the menstrum and the soluble constitute are dissolved .put in wide container and mix repeatedly over period from (2-14)days to allow repeated flow of fresh solvent over the entire surface area .

Some time we use the plant in a cloth bag in many of menstums according to specific gravity. As the soluble constituents dissolved in the menstrum the bag tend to settle to the bottom because of an increase in the specific gravity of the liquid due to its added weight .

Occasional dipping of the drug bag may facilitate the speed of extraction. The extractive is separated from the marc by expressing the bag of drug and washing it with additional fresh menstrum. The washings being added to the extractive. If the maceration is performed with drug loose ,the marc may be removed by straining and / or filtrations with the marc being washed free of extractive by the additional passage of menstrum through the strain or filter into the total extractive.

Official Tinctures preparation:

- Compound benzoic tincture U.S.P.
- Sweet orange peel tincture U.S.P.

- Lemon tincture U.S.P.
- Compound cardamom tincture N.F.
- Toluene balsam tincture N.F.
- Paregoric U.S.P.(camphorated opium tincture)

Except the Compound benzoic tincture which is used as a topical protective and paregoric used to reduce peristaltic movement the other used as flavors.

Most of the products use alcohol as menstrum in the extraction except paregoric and compound cardamom tincture which use diluted alcoholic with small amount of glycerin to prevent separation of tannins from the final product so these product need preservative .

## ***2/ Percolating:***

The term percolating from the Latin per, meaning through and colare , meaning to strain may be described as process in which a comminuted drug is extracted of its soluble solvent through a column of the drug .

The drug is packed in a special extraction apparatus term percolator with the collected extracted called percolate .Most drug extraction are performed by percolation .

In the process of percolation the flow of menstrum over the drug column is generally down ward deepened on the :

- Force of gravity
- Weight of the column of the liquid

In some sophisticated percolation apparatus ,additional pressure in the column is exerted with positive air pressure at the inlet and at the outlet of the apparatus .

Percolators for drug extraction vary greatly according to :

- Shape
- Capacities
- Composition
- Most important utility .

Percolators employed in the large-scale industrial preparation of extractive air generally stainless -steel or glass-lined metal vessels that vary in size and in operation.

Percolators used to extract leaves for instance may be (6-8)feet in diameter and 12 to 18 feet high.

There are different shape of percolator in laboratory small scale and each type has specific use in drug extraction :

- Cylindrical used for complex extraction of drug with minimal expenditure of menstrum .by the passage of menstrum over the drug contained in a high , narrow column rather than a lower wider column.
- Roundish
- Conical or funnel shaped :is used for drugs that swell a great deal during maceration, since the larage upper surface permits expansion of the drug column with little of too high packed column

### ***3/Mixed Technique :***

Ex. Vanilla Tinctures which is used as flavor .

In this process mixed technique are used in first step maceration with water for 12 hr then maceration with alcohol for 3 days to soften the plant and dissolve much of active ingredient .in second step percolate with sucrose and after that percolate with alcoholic to extractive the product from marc.