Galenical Preparations

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**Galenicals**

- **Definition:**
  - Medicines prepared according to the formulae of Galen.
  - A medicinal preparation composed mainly of herbal or vegetable matter.
  - It is prepared by extraction of crude vegetable drugs (active principles) with suitable solvent(s).
  - The term is now used to denote standard preparations containing one or more active constituents of a plant and made by a process that leaves the inert and other undesirable constituents of the plant un-dissolved.
Galen is a Greek anatomist whose theories formed the basis of European medicine until the Renaissance (between 4th and 17th)

- Pharmaceutical preparations are divided into:
  1. Galenical preparation
  2. Non–Galenical preparations
Galenicals

- **Nomenclature:**
  - **Galenicals:** Owing to Galen who discovered it.
  - **Menstrum:** Solvent used for extraction (ex. water, alcohol, ether)
  - **Marc:** The inert fibrous and other insoluble materials remaining after extraction

- **Types:** Infusions– Decoctions– Fluid extracts– Semisolid extracts – Dry extracts– Tinctures– Medical oils.....
**Galenicals**

- **General method of Preparation:**
  1– Commination (reducing substances to small size).
  2– Penetration of the crude drug by the menstrum.
  3– Dissolution of the active principles by the menstrum.
  4– Diffusion of the dissolved active principles through the cell wall to the surrounding menstrum.
  5– Separation of the dissolved active principles from the marc by straining, filtration or expression.
1 - Infusion

**Drug**
- Crude drugs of light structure without dense tissues and containing water-soluble constituents.
- The drug may be freshly broken, thinly sliced, cut small, or coarsely powdered in order to facilitate the solvent penetration.

**Menstrum**
- Always water (cold or boiling).

**Time**
- Determined according to the amount of drug constituents to be extracted and the ease or difficulty with which the water penetrate the drug.

**Examples**
- Teas – Senna infusion – Infusion of senega
Follow: Infusion

Preparation

1.1– Fresh (Dilute) Infusion

- The simplest of all methods of extraction
- A definite weight of the crude drug in a certain state of subdivision (cut small, powdered...) is prepared
- The calculated amount of hot or boiling menstrum (usually water) is added to the crude drug
- Soak for a definite time
- During the period of infusion, the heat should be retained in the container and the content should be stirred
- After the time of infusion, the liquid is poured off or strained
- Do not press or squeeze the marc otherwise colloidal cell contents may be forced out giving a cloudy infusion
- Such fresh infusion should be used within 12 hours
Follow: Infusion

1.2– Concentrated (stock) infusion

- To avoid rapid decomposition to which the fresh (dilute) infusions are subjected.

- These preparations are not made by the concentration of the dilute infusion by evaporation, since thermal treatment will result in loss of the volatile principles.

- Concentrated infusions prepared with alcoholic menstrum or contain alcohol as a preservative.

- Concentrated infusion are not intended to be dispensed in the concentrated state, but upon use, are diluted with at least seven times their volume of water.
Many medicines which were prescribed required infusions of ingredients such as bitter orange, cloves or senna.

Originally the ingredients were left soaking in hot water and then drained. Later, it was discovered that it was more effective if the ingredients were suspended near the surface of the water, as that way more of the drugs were extracted, this discovery led to the development of the infusion pot.
Follow: Infusion

Apparatus

- Consist of covered jar (made of earthenware, stainless-steel, ceramic, glass, porcelain...) to which is fitted at certain height a perforated tray upon which the crude drug may be allowed to rest in water being poured over it.

- The plant may be enclosed loosely in a small muslin bag and suspended in the jar at a height where it will be just covered by the liquid.
Follow: Infusion

- The perforated tray or muslin bag confers two advantages:
  A- Placing the drug near the top of the liquid rather than at its bottom gives complete extraction because when the menstrum surrounding the drug becomes saturated, it will sinks to the bottom due to its increased density and another amount of fresh menstrum displace it leading to circulatory diffusion.

  B- At the end of infusion time, the drug can be lifted out, leaving clear liquid which can be strained quickly.
**Examples of infusion**

**Concentrated infusion of Quassia (Rx.)**

- Quassia, cut small .................. 80 gm
- Alcohol (90%) .......................... 250 ml
- Distilled water, cold Q.S to ........ 1000 ml

Prepared by triple maceration.

1 – Macerate Quassia with 650 ml of cold water for one hour, mix occasionally, strain and reserve the clear liquid.

2 – Repeat maceration process twice, using 500 ml of cold water for each maceration.

3 – Combine second and third maceration and evaporate to 100 ml.

4 – Mix liquid 3 with liquid 1, add alcohol and adjust the volume to 1000 ml with cold distilled water.
Examples of infusion

Dilute compound infusion of Gentian

Rx.

Gentian, thinly sliced .........................12.5 gm
Dried bitter orange peel, cut small......12.5 gm
Dried Lemon peel, cut small.............12.5 gm
boiling water Q.S to......................1000 gm

Preparation: Macerate the solid drugs with 1000 gm of boiling water, then strain.

Dose: 15 to 30 ml

Use: Gentian is a bitter and is used to stimulate gastric secretion, strengthen the digestive system and improve the appetite. It should be given from half to one hour before meals, preferably with juice.
Follow: Infusion

General Notes

- The drug is usually coarsely ground. Very fine powders should be avoided due to difficulty of separation from the infusion.

- Where no specific directions are given, the following general formula and procedure should be used: 50 gm Drug in 1000 ml boiling distilled water (moisten 50 gm drug with 50 ml of cold water and allow to stand for 15 minutes. Then, add boiling water to make 1000 ml infusion).

- Infusions of readily *soluble* active principles are prepared by maceration in *water cold*.
**General Notes**

- **Hot water** extract the desired constituents more quickly than cold but has the **disadvantages** of:
  1. extracting inert materials that may precipitate upon cooling.
  2. causing volatilization or destruction of certain principles.
  3. coagulation of albuminous matters within the drug cell and thereby inhibit the extraction.
2– Decoction

Definition:

- Solutions of the water soluble constituents of plant drugs prepared by boiling the drug with water.

- For extraction of drugs with water soluble and non-volatile constituents, and drugs of hard and woody nature.

- Should be freshly prepared.
Follow: Decoction

Preparation:

- Previously sliced drug barks or wood (5 parts) is boiled with water (100 or 120 parts) in a vessel of enameled iron or earthenware for a definite length of time (15 min.) counting from when the liquid starts to boil with occasional stirring.

- To obtain highly concentrated decoction, boiling is continued until the liquid reduced to a certain volume.

- Allow to cool to about 40°C, press the marc and mix the resulting liquid to the decoction.

- At the end of decoction time, decoction is strained through fine muslin or flannel according to the nature of marc. Then, sufficient water is passed through the strainer to produce a definite volume.
Follow: Decoction

- **Example:** Cinchona bark or wood (contains quinine)
- **Uses:** treatment of fever, malaria and as an appetite stimulant. Also used in anemia, indigestion, gastrointestinal disorders, general fatigue.
## Comparison between infusion and decoction

<table>
<thead>
<tr>
<th>Item</th>
<th>Infusion</th>
<th>Decoction</th>
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</thead>
<tbody>
<tr>
<td>1- Plant</td>
<td>Soft structure (ex. Senna leaves)</td>
<td>Hard woody structure (ex. Cinchona bark)</td>
</tr>
<tr>
<td>2- Menstrum</td>
<td>Boiling or cold water</td>
<td>Boiling water</td>
</tr>
<tr>
<td>3- Procedure</td>
<td>Infusing the drug with cold or hot water</td>
<td>Boiling the drug with water</td>
</tr>
<tr>
<td>4- Time</td>
<td>Calculated as soon as water is added to drug</td>
<td>Calculated as soon as the water begins to boil</td>
</tr>
<tr>
<td>5- Adjustment of final volume</td>
<td>No adjustment</td>
<td>Adjustment is necessary</td>
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<tr>
<td>6- Apparatus</td>
<td>Infusion earthenware pot</td>
<td>Any covered apparatus</td>
</tr>
<tr>
<td>7- Storage</td>
<td>Used fresh within 12 hours</td>
<td>Used fresh and when stored in refrigerator used within few days</td>
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