

**Evaluation of herb involves** determination of its quantity, quality, purity, identity and detection of nature of adulteration.

The following are some basic methods most commonly used for evaluation of crude drugs:

### **A- Macroscopical (Organoleptic, Qualitative,sensory) Evaluation:**

It mean the evaluation of crude drug depending on human senses (eye, smell, taste, texture الملمس other). The characteristics which are evaluated with a help of sense organ such as color, odor, taste, size, shape etc. Examples:

a-**Colour**:- (Cinnamon Bark -**Brown**) b-**Odor**:- (Jatamansi-Aromatic) c-**Taste**: (Capsicum-Pungent حاد او لاذع ) d-**Size**:- (Digitalis:10-30 cm long and 4-10 cm wide) e-**Shape**:- (Nux vomica-Disc shaped) f-**Texture**:- (Cascara barks- Fractured surface)

### **B-Microscopic Evaluation:**

This method is used to identify organized drug by their known histological characters through Transverse section (T.S.) مقطع عرضي or Longitudinal Section (L.S.) شعاعي طولي or Radial Longitudinal Section (R.L.S.) or Tangential Longitudinal Section (T.L.S.) تماسي.

### **C-Chemical Evaluation:**

It involves chemical tests, chemical assay and also the phytochemical النباتي investigation of the crude drugs.it includes a qualitative chemical tests and quantitative chemical tests.

#### **qualitative chemical tests**

This test depend on **color reaction** when treated with certain chemical reagents, Ex:-

1-Anthraquinone **glycoside** (found in senna , aloe ) + KOH = red color ,  
The intensity of the **red** color depend on concentration of active constituent

2-Drug containing **alkaloids** such as Atropa belladonna +dragendroffs reagent (**orange-red** color )

3-Drug containing **carbohydrate** (CHO) + molish reagent =**violate** color

4-Drug containing **tannins** (such as pomegranate) + ferric chloride ( $FeCl_3$  5%) =**green** color

5-Drug containing **starch**+ iodine solution+ HCL= blue color

6-Drug containing **lignin**+ phloroglucinol+ HCL= pink color

### **Quantitative chemical tests**

These tests are applied on fixed oil , volatile oil , waxes. The most important tests are :-

1- **Acid value** :- it's the number of milligrams of KOH potassium hydroxide required to neutral 1 gm of an acid and its depend on it molecular weight ex:-oxalic acid about 124 mg, acetic acid الخل 93 mg

**2-Iodine value** :- its measure of the number of parts of iodine absorbed by 100 parts of the substance . it help to indicate the composition of complex mixture as well as pure substance

**3-Saponification value** :-it is the number of milligram of potassium hydroxide (KOH) used to neutralize the fatty acids that from soap present in the sample.

**4-Aster value** : (which is characteristic of each ester ) it's the number of mg of potassium hydroxide (KOH ) required to neutralize the acids resulting from the complete hydrolysis of esters.

### **D-Physical Evaluation**

In this Method the herbal drugs are evaluated on the basis of some important physical properties.eg. solubility, specific gravity, Melting point for solid, Refractive index معامل الانكسار for liquids.

### **E- pharmacologically Evaluation**

Assay of pharmacologically active substance by using biological animal models. e.g.: Cardiac activity of Digitalis in **pigeons** الحمام , Hypoglycemic activity of insulin in Rabbits.

**F-Microbial Assay:** It is type of biological assay specially performed with microorganism like bacteria and fungi. e.g.: It is used in evaluation of potency of Antibiotics, Antimicrobial and Antifungal Drugs.

Questions:

Define :

1- Evaluation of herb 2-sensory evaluation 3-chemical evaluation 4-physical evaluation, 5- evaluation 6- Microbial Assay 7-pharmacologically Evaluation