

Identification and evaluation of crude drug



THIS INVOLVE THE IDENTIFICATION OF PLANT MATERIALS AND DETERMINATION OF ITS QUALITY , PURITY AND ADULTERATED , WE CAN FIND OUT THE TYPE OF ADULTERANT.

AN IMPORTANT STEP IN IDENTIFICATION OF CRUDE DRUG THE IDENTITY CAN BE DETERMINED BY COMPARING THE MORPHOLOGICAL CHARACTER OF THE CRUDE DRUG WITH THAT AUTHENTIC SAMPLE OF DRUG USING CERTAIN INSTITUTION OR CENTERS SUCH AS IN IRAQ(THE NATIONAL HERBARIUM CENTER). THIS STEP IS USUALLY CARRIED OUT IF THERE IS ANY CLOUT ABOUT THE ORIGIN PLANT OR IF THE WHOLE OR INTACT CRUDE DRUG IS NOT COMPLETELY IDENTIFIED

There are several methods used to identify the drugs :-

- 1- Organoleptic or macroscopical method** (by the use the organ of sense) and this includes
- a) Shape and size** :- the shape can be described as oval , cylindrical, fussy form , or conical while the size of plant described by length and diameter and indicated in cm or mm
 - b) Color** :- the color of drug is indicated by white , brawn , yellow , yellowish white and if it cannot be indicated we said it has acharacteristic or distinct color
 - c) Odour** :- the odour of crude drug depend on the amount of active volatile constituents present in crude drug and indicated by the term aromatic , spicy , camphoraceous or if cannot be described we say it has adistictint or characteristic odour
 - d) Taste** :- the taste of crude drug can be described as : bitter , sweet , acidic , salty , nauseous (induce vomiting) and if cannot be described we say it has acharacteristic or distinct taste .

2- Microscopical method



- The organoleptic method depend on morphological characters but for further assurance we use this method by examination of histological feature because crude drug has his element which vary from one crude drug to another
- Histological study can be carried out by marking thin section (transfer section or longitudinal section) then the thin section is stained with solution according to the type of element then examine under the microscope .
- The microscopical method is not only important for histological study but also important for identification of powdered drugs because powdered drugs contain few macroscopical feature such as color , taste and odour therefore should be examine using the microscope
- The microscopical examination of powdered drugs depend on presence or absence of certain cells or tissue elements such as : stone cells , fibers or depends on cells elements such as starch grains , oil droplets , calcium oxalate , crystals , aleurones grains .

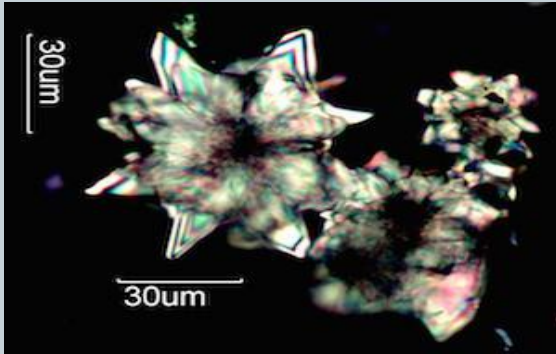
Using certain reagent or solution for their staining which depend on the type of elements under the microscope.

For examples:-



- Lignified cells stained use phloroglucinol and concern treated with Hcl then lignified cells stained pink or red white color
- Calcium oxalate and trichome examine using chloral hydrate solution which dissolve starch and pigments and calcium oxalate appear under the microscope .
- Starch grains add 1 or 2 drops of iodine then blue color will appear or black color according to the concentration of the iodine solution
- The inorganic material will not colored with iodine the cell contents differ from crude drug to another

- Fibers present in ginger differ from that present in cinchona
- Fibers in ginger
- Fiber in cinchona
- Trichomes
- For calcium oxalate



Flower shape



Needle shape

- Microscopical examination also used for quantitative examination which called microscopical quantitative examination which depend on presence of certain elements or type of cells in measured quantity of unknown powder and comparing the count with that obtained from the same element in a standard powder and from this we can say that the powdered drug is pure or not .
- The starch of powder drug
- Potato starch
- Rise starch
- Wheat starch
- Maize starch
- Ginger starch

Evaluation of crude drug

It's the determination of amount of active constituent present in the crude drug

From the tissue element and cell contents the different types of crude drugs can be identified and purity of crude drug is determined, this is called Qualitative Microscopical Examination)

3- Physical method

there are very few physical constants that can be applied in the identification and evaluation of crude drug constituent (alkaloid and glycoside) among these physical constant are

a) Solubility :- can be expressed by no. of mls of solvent required to dissolve 1 gm of substance (crude drug) ex:- caffeine

1gm / 50 ml of ordinary water

1gm / 75ml of alcohol

1gm / 6ml of chloroform

1gm / 6ml of hot water (at 80 c)

Codeine sulphate

1gm / 30 ml of water

1gm / 1300 ml of alcohol

1gm / 6.5-7 ml chloroform



b) Special gravity :- its used for non cellular constituent such as fixed oil , volatile oil .

- Specific gravity for anise oil = 0.97-0.98

c) Melting point for solid

- Caffeine = 236-238 c

d) Refractive index for liquids

e) Lemon oil =1.47-1.48