



TANNIN PRODUCTION

TANNIC ACID (BP 1968)

IDENTIFICATION TESTS FOR SOME ACTIVE COMPOUNDS

TANNINS ARE POLYPHENOLIC COMPOUNDS EXISTING IN PLANTS. THEY DISSOLVE IN WATER, ETHANOL AND ACETONE EASILY; IN LIPOPHILIC SOLVENTS SUCH AS ETHER AND CHLOROFORM, POORLY. THEY HAVE BITTER TASTE AND ASTRINGENT PROPERTY. THEY BIND THE SKIN AND SOLIDIFY IT.

TANNINS ARE PRESENT IN PLANTS AS COMPLEX MOLECULES NAMED TANNOID. WHEN THEY UNITED WITH OSES, IS REFERED TO TANNOZID.

- **Aqueous solution of tannins can be precipitated with heavy metal salts. (Cu, Hg, Fe, Pb, Zn)**
- **With Fe⁺³ salts Gallic (gallic acid+ose) ve Ellagic (ellagic acid+ose) tannins..... blue- black ;**
- **Catechic tannins brown-green colour and precipitate**
- **With brominated water and STIASNY (formalin + HCl) reagents, only Catechic tannins precipitate**

➤ **PERCOLATION:**

Process of taking the substances from powdered drugs by passing solvent through the material. It based on passing the enough solvent through the powdered drug slowly and long time.

➤ **Method**

PERCOLATION;

kullanılan gereç

PERCOLATOR' dür.

EXPERIMENTAL PROCEDURE

Drug: Gallae Quercinae (Nutgall)

Coarse powdered 10 g (10,???? g) drug is filled into the percolator. Upper part of the drug should not be dry.

Ether : Ethanol : Water (50: 6 :2)*

For 1,5 hour it is left to maceration. End of the 2 hour liquid is put in the separation funnel.

+3 ml water and shake strongly.

***: Tannins dissolve in ethanol well, nevertheless to prevent passing the resin and other pigments to the extract this mixture is used.**



UPPER PHASE

SUBPHASE (Syrupy)

**Hydroalcoholic phase
is put into constant weigh
capsule. (Capsule should be
weighed before use)**

**..evoporated on water bath at
50°C**

**.. Dried in oven at 50 °C, weighed.
Yield is calculated.**



TANNIC ACID (BP 1968)
(PHARMACOPOEIAL ANALYSIS)

RESOLUTION:

- It dissolves in less than one portion of water and %95 EtOH.
- ..never dissolve in ether and chloroform.
- ...in acetone dissolve easily.
- ...in glycerine dissolve slowly.

IDENTIFICATION

A-) Aqueous solution of tannic acid



+ % 1 gelatin solution



WHITE precipitate

B-) Aqueous solution of tannic acid

+

FeCl₃ test solution

+

Dilute H₂SO₄



Bluish-black colour, then.....Yellowish-Brown solution

C-) % 1 tannic acid solution + methyl red



acid reaction

kırmızı colour

Gum, Dextrin Sugar and Salts:

**2 ml % 20 (w/v) solution + 2 ml % 90 ethanol..... Solution remains clean.....
+1 ml ether..... There should not be blur.**

IDENTIFICATION TESTS FOR SOME ACTIVE COMPOUNDS

FLAVONOSIDES

➤ EXPERIMENTAL PROCEDURE:

A-) Sample: Yellow flowers

% 2 decoction of sample is prepared.

Decoction: cold water is put onto drug and boiled 30 min. Then filtered through cotton when it is still hot.

SAMPLE DECOCTION IS TAKEN IN 3 TUBES:

1. Tube

+

1-2 ml % 10 NH_3



Dark **YELLOW** colour

2. Tube

+

alkali plumbic acetate



YELLOW-ORANGE

3. Tube

+

aqueous FeCl_3



GREEN-BLUE -
BLACK

precipitate

B-) CYANIDIN (SHINODA) RXN

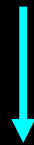
It is a specific oxido-reduction reaction for flavonoids. Type of flavonoid as well as presence of flavonoid can be understood.

➤ Flavone heterosides

:Yellow pigments that are very common in plants. They are known as flavonoside.

EXPERIMENTAL PROCEDURE:

Sample + methanol



extraction by heating 1-2 min

Filter



Filtrate + conc HCl (1-2 ml)
+ Mg powder



Foam and solution colour:

ORANGE \longrightarrow **FLAVONE**

RED \longrightarrow **FLAVONOL**

VIOLET \longrightarrow **FLAVONONE**

Reason of the foam is H₂ gas released.



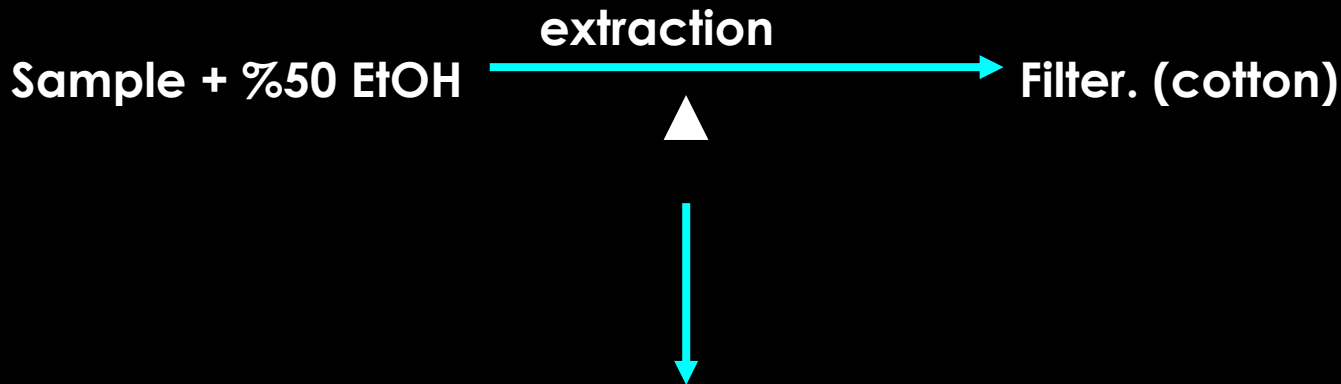
Chalcones, isoflavones ve biflavones do not give this reaction.

ANTHOCYANS

➤ Anthocyanins, carry benzopyrylium structure. They are the pigments; very common in plants (especially flower, leaf, fruit) and give red, blue, purple colours.

➤ EXPERIMENTAL PROCEDURE:

Sample: Pink – purple flowers



Filtrate is taken in 5 tubes

1.tube
+
dil. H₂SO₄



RED Colour
(Anthocyanins give red
colour in acidic medium)

2.tube
+
NaOH



YELLOW Colour
(Anthocyanins give yellow
colour in alkali medium)

3.tube
+
Kurşun Asetat



GREEN Colour
(Phenolic compounds
precipitate with
heavy metals)

4.tube

+

Amyl alcohol (Drip)



(Upper phase, amyl alcohol, colorless)
(Subphase, hydroalcoholic,
pinkish)(Same with previous extract)

5.tube

+

dil. H₂SO₄

Heat in water bath slightly



Cool

+

Amyl alcohol

(Upper phase, amyl alcohol
light pink)
(Subphase, hydroalcoholic
pink-red)

➤ **Why does the amyl alcohol phase become pink?**

At the beginning , anthocyanosides do not dissolve in amyl alcohol because of their heteroside form. By hydrolyzing with dil. H_2SO_4 , they split and anthocyanins become free. Anthocyanins can color the amyl alcohol layer cause they can dissolve in this liquid.