



Fixed oil

Lab No. 8

Examples of fixed oil:

- a. Castor oil
- b. Olive oil
- c. Cod liver oil.

Differences between fixed oil and volatile oil:

Fixed oil	Volatile oil
Not volatile	Volatile
Cannot be distilled	Can be distilled from their natural sources
Consists of glyceryl esters of fatty acids	Don't consist of glyceryl esters of fatty acids
Leave a permanent grease spot on paper	Don't leave a spot on paper
Become rancid	Don't become rancid but it is oxidize and renisify when exposes to air

Physical properties of fixed oil:

1-Solubility: They are insoluble in water.
Soluble in solvents e.g. ether and chloroform.

2-Odour: Bland.

3-Taste: Little distinctiveness.

4-Colour: Colourless or yellow due to presence of carotene (provitamins A).

**Tests for adulteration:**

They have a great importance to judge the quality of fixed oil.

a)Halphen test:

it is used to detect the absence of cottonseed oil in other oils e.g. olive oil.

Procedure:

Mix 2.5 ml of olive oil, 2.5 ml amylalcohol with 2.5 ml of 1% w/v solution of ppt sulphur in CCL₄. Close the tube and put in water bath.

Result:

No pink colour should develop within 30min.

b)Baudouins test:

It is used to detect the absence of sesame oil in other oils e.g. olive oil.

Procedure:

Shake 2 ml of olive oil with 1% w/v solution of sucrose in HCl.

Result:

No pink colour in the acidic layer.

c)Test for rancidity:**Procedure:**

Shake 5 ml of olive oil with 5 ml HCl for 1 min, add 5ml of resorcinolin benzol solution (shake).

Result:

The colour of acid layer must not be deeper than the colour produced by diluting 4 ml of potassium permanganate in 100 ml water.

Physical constants:

Including:

- a. Refractive index.
- b. Specific gravity.

Chemical constants:

Including:

- a. Acid value.
- b. Iodine value.
- c. Saponification value.

They are important for identification and judging the quality of oils.

a. Acid value:

Definition: Is the number of mg of potassium hydroxide required to neutralize the free acid in one gram of the sample.

Principle: Acid value is a measure of the extent to which the glycerides in the oil have been decomposed by lipase action.

b. Iodine value:

Definition: Is the weight of iodine absorbed by 100 parts by weight of the sample.

Principle: is a measure of the degree of unsaturation, the greater the degree of unsaturation (the higher the I.V), the greater of oil liability to go rancid by oxidation.