

Test on Fats & Oils

① Solubility test :-
separate T. T.

- A - Water
- B - ether
- C - chloroform
- D - alcohol

} add few drops
of oil

Result →

- A → oil is not miscible
- B → oil is miscible
- C → oil is miscible
- D → oil sink to bottom; on heating oil dissolves

3. Test on Fats and Oils

Fats and oils are found abundantly in plants and animals forming distinct foodstuff. Fats have double caloric value than the carbohydrates. Fats have greasy feel with low melting point. They are soluble in organic solvents like ether, chloroform and alcohol and insoluble in water. Fats are hydrolysed by boiling and the most common acids are :

- (1) $\text{CH}_3(\text{CH}_2)_{14}\text{COOH}$ — palmitic acid
- (2) $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$ — stearic acid
- (3) $\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COOH}$ — oleic acid

For experiments with fats, olive oil is quite suitable.

Experiment (1) : Solubility test.

Procedure : In separate test tubes marked A, B, C and D, take 0.5 cc of water in test tube A, 5 cc of ether in test tube B, 5 cc of chloroform in test tube C, and 5 cc of alcohol in test tube D. Add 3 drops of oil, preferably olive oil, in each test tube drop by drop.

Result : Test tube A = oil is not miscible and it floats.

Test tube B = oil is miscible.

Test tube C = oil is miscible.

Test tube D = oil sinks to bottom; on heating oil dissolves.

Experiment (2) : Acrolin test.

Procedure : In a dry test tube take 0.5 cc of olive oil, then add knife point of sodium or potassium hydrogen sulphate and mix thoroughly by a glass rod and heat.

Result : Observe irritating odour of Acrolin. The glycerol present gives Acrolin on dehydration.

Experiment (3) : Emulsification of fats.

Procedure : In a test tube take 3 cc of neutral olive oil, then add 2 drops of oleic acid, mix by shaking to form rancid oil. Now add 2 drops of this rancid oil to another test tube already containing 3 cc of dilute caustic soda.

Result : The acid dissolves in alkali forming a soap, which entangles oil by diffusion to form emulsion.

Experiment (4) : Salting out.

Procedure : Take 10 drops of olive oil in a test tube, add 2 cc of alcoholic caustic soda, boil carefully. Soap solution is obtained. Divide this solution equally in 3 separate test tubes marked A, B and C. To test tube A add 3 cc of conc. HCl or H_2SO_4 , to B add sodium chloride powder and to C add 2% calcium solution. Observe.

Result : Test tube A = small oil globules separate and float on the surface.

Test tube B = white precipitate separates and floats on the surface.

Test tube C = white precipitate of calcium soap is formed.