

Crude Fat – Ether Extract**Principle :**

Fat or lipids is defined as organic substances which cannot dissolved in water but dissolved in organic solvents (alcohol, ether ,ethanol) ,its prefer to using petroleum ether as a solvent .the method of fat extraction is named Soxhlet method . The principle of these method is extraction of fat from feed by the solvent(petroleum ether) and then evaporation of the solvent in oven ,the residue is represent the weight of fat in feed sample . the crude fat include :

1. free fatty acid
2. Volatile fatty acids
3. Cholesterol
4. Lecithin
5. waxes
6. Chlorophyll
7. Vit. A , D , E , K .
8. phospholipids

petroleum ether properties :

1. low boiling point (40-60° C) .
2. it extract fat only .
3. not affected by moisture and its available .

Soxhlet extraction method :Using of Soxhlet apparatus which compose of :

- Condenser :
- body or Extractor .
- Flask .

Equipments :

1. Analytical balance.
- 2 . Soxhlet apparatus with temperature control.
- 3 .Extraction thimble .
- 4 . Electrically heated vacuum oven.
5. Desiccator
6. Glass wool .

7. petroleum ether (boiling point 40–60 °C),

Procedure :

This procedure describes a manual method and called Extraction :-

- 1- Weigh at least 2 g of the sample to the nearest 0.1 mg into the extraction thimble and cover with a Glass wool.
- 2- Weigh the flask and add 95 ml of petroleum ether .
- 3- Place the thimble in the extractor and connect it to the flask and put condenser . .
- 4- begin Extraction for 6 hours with petroleum ether or regulate the heating apparatus to obtain at least 10 siphoning. Or follow the manufacturer's guidelines.
- 5- disconnect the apparatus and evaporate the solvent in oven (80 ± 2 °C) for 1.5 hour until the flask is nearly free from the solvent,
- 6- Cool the flask in a desiccator and weigh to the nearest 0.1 mg .

Calculation :

$$\% \text{ Crude Fat} = \frac{\text{ether extract Wt}(\text{fat Wt}) \times 100}{\text{sample Wt}}$$

Notes:

1. Soxhlet extraction method is suitable for extraction of active ingredient from different materials by using suitable solvent .
2. the sample after extraction is suitable to determination or crude fiber .
3. there are many modification on this method like using of filter paper instead of thimble .

Exercise :

5 gr of feed sample is analyzed for fat .flask Wt was 50 gr and after extraction become 50.2 gr .find the fat percent of the sample ?