QUANTATIVE ANALYSIS OF VOLATILE OILS (GRAVIMETRIC METHOD)

In this method, volatile oil is separated by water distillation, water-oil distillate, saturated with salt then extracted with ether. Solvent; evaporated in a tared container. the weight of the remaining volatile oil is calculated and % volatile oil is calculated (w/w) .

Experimental process:

Powdered sample+ water+ boiling stone → **Distillate is collected into erlenmayer**

+

Salt

Extracted with ether ↓

Extract is dried by anhydrous Na_2SO_4

Organic phase is evopareted ↓

Flask is brought to constant weight by a drying oven at 50 ºC and weighed.

Percentage of the essential oil amount is calculated as w/w.

- The reason for the extraction with ether; dissolution of volatile oils in this solvent and ether is low-flying (34,6 °C). Instead of water, such as pentane, hexane, benzene and petroleum ether and nonpolar solvents with low boiling point may also be used.
- Water saturation rate with water is 30%.

  60 g of NaCl are required for 200 ml of distillate.
- The reason why we use 50 ^{o}C oven, volatile oils fly at higher temperatures.
- Why do we feed with salt?

  Distillate water and volatile oil coexist. Volatile oils carry water-soluble compounds even water-soluble. Water can not attract water-soluble compounds in volatile oil when saturated with salt, it is easy to completely remove the volatile oil.

Pharmacopeias accept the quantative analysis method of volatile oil with volumetric method. Because, gravimetric method has some disadvantages;

- Quantitation by this method takes along time. A lot of equipments are used.
- Due to the distillation and extraction, if the extraction is not successfully performed, yield will be poor.
- Essential oil can not be used after these processes.
- Because of a lot of equipments, amount of essential oil can be lost.