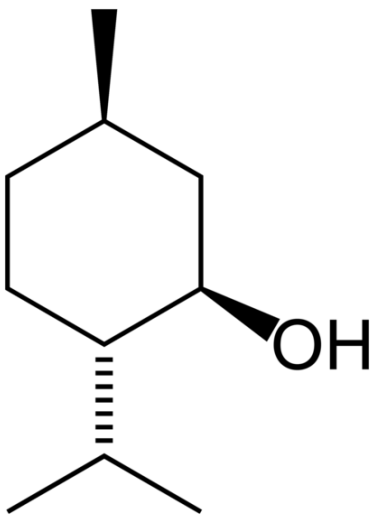


# QUANTIFICATION OF TOTAL ALCOHOLS IN OLEUM MENTHAE

- Oleum Menthae is an essential oil which is obtained using the dried leaves and flowering tops of *Mentha piperita* L.
- The essential oil consists of % 50 % menthol and 10 % mentone. Menthyl acetate and menthofurane are of the other constituents of Oleum Menthae.

- The essential oil is initially acetylated for the quantification of alcohols, thus all the alcohols turn into ester getirilir.



- In case the essential oil contains both free alcohols and esters, the ester value is determined by saponification prior to the acetylation.
- Following the acetylation, the ester value of the oil is calculated. This calculation yields the total of ester and esterificated alcohol.
- The difference of these two results is the free alcohol amount.
- Ester value: the number of milligrams of potassium hydroxide required to saponify the esters present in 1 g oil.

# Experiment Procedure

10 ml oil + 1 g anhydr Na-acetate +10 ml acetic acid anhydride

↓  
1 hour reflux

3 kez shake with 5 ml hot water in a seperation funnel (3 times)

↓  
Lower phase (water phase) is discarted

↓  
Upper phase is washed with  $\text{Na}_2\text{CO}_3$  TS and 1:1 water: $\text{Na}_2\text{CO}_3$  in seperation and lower phases are combined. This process is repeated untill pink color occurs with 1 drop of phenolphthalein

The oil is washed with distilled water once and dried using anhydr  $\text{Na}_2\text{SO}_4$



5 ml of the oil is weighed

+

50 ml 0.5 N KOH is added to 5 ml of the oil and refluxed for 30 minutes (saponification)

+

10 drops of phenolphthalein is added and excess of KOH is titrated with 0.5N HCl until the pink color fades

- total alcohol % =  $\frac{7,813 \times A \times (1 - 0,0021 \times E)}{(B - 0,021 \times A)}$

B= weight of the acetylated oil (5 ml )

E= percentage of ester calculated for menthyl acetate

A= b-a            amount of 0.5 N HCl consumed for blank (a ml)

                         amount of 0.5 N HCl consumed for the sample (b ml)

B-0,021 X A : An experimental value which converts the weight of acetylated oil to the weight of oil.

1-0,0021 X E : The value which excludes the error occurs because of the components except menthol (It provides the determination of the weight of free esters).