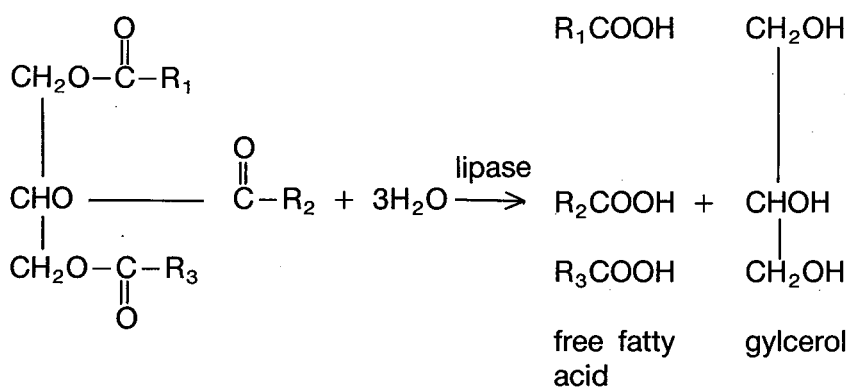


DETERMINATION OF ACID VALUE

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INTRODUCTION

The acid value is a measure of the extent to which the glycerides in the oil have been hydrolysed by lipase action. The glycerides are also hydrolysed with water in the presence of air and possibly bacteria. The decomposition is accelerated by heat and light.



As rancidity is usually accompanied by free fatty acid formation, determination of acid value is often used as a general indication of the condition and edibility of oils.

The acid value is the number of milligrams of potassium hydroxide required to neutralize the free fatty acids in 1.0 g of fat or oil.

I APPARATUS

Microburette (2 ml with 0.01 ml intervals)
Conical flasks (100 ml)
5 ml pipettes

II REAGENTS

a) 0.02N KOH in ethyl alcohol

Weigh 5.6 g of potassium hydroxide, dissolve in distilled water and make up to 100 ml with distilled water (1N solution). Dilute 50 times with ethyl alcohol when required.

b) n-Hexane

c) 1% phenolphthalein or thymolphthalein in ethyl alcohol

Dissolve 1 g of either indicator in 100 ml of ethyl alcohol.

III PROCEDURE

1. Take 0.1-0.3 g of fat sample or A ml of the extract containing 0.1-0.3 g of fat in a 100 ml Erlenmeyer flask.
2. Add [10 — A] ml of n-Hexane and 1-2 drops of indicator.
3. Titrate the solution against 0.02N KOH solution. The end point is reached when pink (phenolphthalein) or blue (thymolphthalein) colour persists for 30 seconds.
4. Carry out a blank test using A ml of C-M Mixture instead of the extract.

IV CALCULATION

$$\text{Acid value (mg/g)} = \frac{56.11 \times 0.02 \times (V_s - V_b) \times F}{W}$$

where V_s = titration volume of sample (ml);

V_b = titration volume of blank (ml);

W = weight of fat in the volume of extract used (g);

F = factor of 0.02 KOH solution, where

$F = \frac{5}{V_f}$: V_f is the volume of 0.02N KOH required to neutralize 5 ml of the 0.02N H_2SO_4 solution.

56.11 = Molecular weight of KOH

0.02 = Concentration of KOH