Practice 31.11.

Sterile Neutral Olive Oil (T.P. 1974)

Oleum Olivae Nuetralisatum Sterilisatum

Preparation:

In order to prepare the sterilized neutral olive oil, the acidity level of the olive oil is first determined. Then, by using these values, the amount of crystal sodium carbonate to neutralize the olive oil is calculated.

Acidity level: The volume (ml) of 1N KOH solution required to neutralize free acids in 100 g of oil.

1. Preparation of neutral ether: alcohol solution

For this purpose, 30 ml of an equal volume of alcohol: ether mixture (15 ml of 95% v / v alcohol + 15 ml of ether) is prepared. This mixture is added with 1.0 ml phenolphthalein solution (1 k phenolphthalein + 99 alcohol). The pink color is observed with 0.1 N KOH solution and titrated until it remains constant for 10 seconds.

2. Determination of the acidity of the olive oil

After the above procedure, weigh 5 g of oil in an erlenmeyer flask, to which this solution is added. After thoroughly dissolving the oil, 1.0 ml of phenolphthalein solution is added to the mixture, and the pink color is titrated constantly for 15 seconds with 0.1 N KOH solution. The acidity level is calculated by the following formula.

If the amount of spent 0.1 N KOH is (**b**) ml, and the acidity level is the required amount for 100 g of oil;

I) If **b** ml spent for 5 g of oil,
X ml spent for 100 g of oil

X = **20 x b ml** 0.1 N KOH

The acidity level is the volume of 1N KOH; but we use 0.1 N KOH;

II) $N_1 \times V_1 = N_2 \times V_2$

$0.1 \times (20 \times b) = 1 \times V_2$

V_2= **20 x b x 0.1 = Acidity level (AL)**

1. Neutralization of olive oil

a) Crystal aqueous sodium carbonate ($Na_2CO_3.10H_2O$) is used for this purpose. The free acid contained in the oil to be used is calculated on oleic acid. The amount of free oleic acid present in 100 g of oil is calculated from the degree of acidity of the oil and multiplied by 2.5. Thus, the amount of crystal aqueous sodium carbonate that neutralizes 100 g of oil is found.

The amount of oleic acid present in 100 g of oil is calculated as follows:

$$\underset{1\ mol}{R\text{-}COOH} + KOH \longrightarrow \underset{1\ mol}{R\text{-}COOK} + H_2O$$

Since one mole is used, it can be calculated from the amount of KOH.

The molecular weight of KOH is 56.1 g, and the molecular weight of oleic acid is 282 g.

1000 ml	1 N KOH	56.1 g
AL		X

$$X = (56.1 \times AL) / 1000$$

If 56.1 g is spent	versus 282 g
X	(56.1 x AL) / 1000

X = 0.282 x AL g corresponding to oleic acid.

This value is multiplied by 2.5 to find the amount of $Na_2CO_3.10H_2O$ to be added.

Molecular weight of $Na_2CO_3.10H_2O$= 286 g, and its cross valence is 2
Molecular weight of KOH = 56.1 g, and its cross valence is 1

The amount of $Na_2CO_3.10H_2O$ corresponding to 2 x 56.1 $\longrightarrow$ 286 g

The amount of $Na_2CO_3.10H_2O$ corresponding to 0.282xAL $\longrightarrow$ $\dfrac{0.282xAL \times \mathbf{286}}{\mathbf{2 \times 56.1}}$

The amount of $Na_2CO_3.10H_2O$ to be used for the amount of oleic acid found = 0.282 x AL **x 2.5**

NOTE: This value for 100 g oil neutralization is recalculated according to the amount of neutral oil required.

b) It is also possible to find the amount of $Na_2CO_3.10H_2O$ to be added by the result of multiplying the acidity level of the oil by 0.6.

The amount of sodium carbonate required is calculated according to the amount of oil to be prepared. The amount of sodium carbonate determined is slurried with water to 1/10 of its weight. The slurry added to the oil heated to 45 °C in the water bath and shaken vigorously. The agitated oil is left for 24 hours. It is then filtered through a dry filter paper, filled the bottles with the required amount of neutralized oil and sealed. It is sterilized for 2 hours at 150 °C in dry air. Labeled appropriately.

Note: Filtering can be done by collecting neutralized oil, which everyone has prepared.

Points to note:

1. Water should not be added more than necessary; because the water passes through the lower phase and does not leak through the oiled filter paper and prevents the oil from draining. If the filtrate is mixed even with a small amount of the water, the water sinked underneath the oil during sterilization at 150 °C may explode as the water evaporates at this temperature. In addition, excess water emulsifies with oil due to the temperature during sterilization, and causes the preparation to be cloudy.
2. Rubber covers are sterilized together with filled and sealed bottles at 150 ° C with dry air. First, the bottles are thoroughly washed, turned over on a piece of paper and drained. Then they are dried in a drying cabinet. 5.3 ml of neutral olive oil is filled, the washed and dried rubber cover is closed and sterilized.

Questions:

1. Where is sterile neutral olive oil used in pharmacy? Please write the names of the preparations prepared with it in Latin, Turkish and English.
2. How are drug forms sterilized when water or oil is used as solvent?
3. What substances are used to protect the oils from oxidation?
4. In what way are the preparations prepared with sterile neutral olive oil applied to the body, why?

32.1. Eye Preparations

32.1.1. Eye Drops

Practice 32.1.

Atropine Sulphate Eye Drop

Atropine Sulphate		0.05 g
Sodium Chloride		q.s.
Distilled water	q.s.	10.00 ml

Preparation:

Atropine sulphate and sodium chloride are dissolved in purified water. It is filtered through the porcelain, glass or membrane filterto the bottle and the mouth of the bottle is closed appropriately. After being sterilized for 15 minutes at 121 ° C in an autoclave, it is properly labeled.

Questions:

1. Calculate the isotony of this eye drop according to the NaCl-equivalan and White-Vincent methods.

2. Write the functions of the substances in the formula.
3. How should the buffer solution be selected if it is necessary to use a buffer solution instead of purified water in the above formulation?
4. What is the European Pharmacopoeia's recommendation on particle size limits of eye preparations in the form of suspension and semi-solid?
5. What are the warnings that must be written on the labels of eyebaths and eyedrops in multi-dose containers according to the European Pharmacopies for use after the packaging has been opened? Write and explain why.
6. What are the main factors to consider when preparing an eye preparation? Please write them.
7. What quality controls should be done according to European Pharmacopies after eye preparations are prepared? Please write them.