

## EXPERIMENT NO: 12

### ANALYSIS OF MEAT AND MEAT PRODUCTS

Analysis methods for meat and meat products; organoleptic examination, microbiological analysis, toxicological analysis, histological examination, serological analysis, chemical analysis.

Histological examination of meat products is carried out to investigate other than meat such as internal organs, mucous, tendo, prohibited from the participation of its own standard; serological analysis is carried out to investigate different types of meat.

Chemical analysis of meat and meat products can be summarized as determination of odor, moisture, oil, ash, dust, protein, starch, nitrite, nitrate and coloring matter.

Nitrite and nitrate are added to meat and meat products as preservatives. Other preservatives (boric acid, formol, salicylic acid, benzoic acid) are prohibited. It is checked whether these substances are placed.

#### Experimental Procedure:

- **Meat putrifaction**

In general, the sum of the bacterial events that organic substances are exposed to after death is called putrifaction. In an other saying; the disintegration of proteins in microbial activities, and the occurrence of some smelling gases.

Detection of putrifaction of meat is done with the help of some changes in meat:

1. Meat appearance: Broken meats are greenish and have a bad odor (with the formation of indole,  $H_2S$  and  $NH_3$ )
2. pH: A definite sign of decomposition in stinking meats is an alkaline reaction (as a result of  $NH_3$  formation). If the pH of the meat is more than 6.2, the meat is considered a suspect. If the pH is higher, the meat may be stinking and degraded.

The pH of the meat is determined between two parts of the suspected meat by compressing the pH indicator paper and waiting for 5 minutes.

3. Ammonia search

- a) With Nessler reagent: Place a cross-section of the sample meat in a petri dish. Add nessler reagent. If there is putrifaction, a color that changes from orange to dark-orange brown occurs.
  - b) W.Eber method : Put 1 ml mixture of "1 part 25% HCL + 3 part 96% alcohol + 1 part of ether into a test tube. The tube is immediately closed. Then cover is taken. The mouth of the tube is sealed with a mushroom with a thin glass rod containing a piece of meat to be examined. At this time, the glass rod should not touch the edges of the tube and should be at a height of about 1 cm due to the solution in it. If there is ammonia, it is seen that white ammonium chloride clouds lowered downwards from the meat piece.
4. Search  $H_2S$  with lead acetate

The sample is finely ground and placed in the test tube. Dried filter paper dipped in a 10% lead acetate solution is immersed in the tube, the mouth of the tube is tightly closed with a plug and then wait. A black stain that appears on the paper indicates a stench.

- **Determination of nitrite and nitrate in meat**

10 grams are taken from the sample. Put in a 250 ml flask. Over 150 ml of distilled water with 6 drops of 20% NaOH are added. Shake well. Half an hour is occasionally shaken for 1-2 hours and then filtered. 10 ml of filtrate is taken. Add 1 ml of diazo reagent, 1-2 drops of phosphoric acid to 10 ml of filtrate. Wait 10 min. The formation of pink color indicates the presence of nitrite.

Add 4 ml of diphenylamine (leaked from the edge of the tube) and a sulfuric acid reagent onto 1 ml of the filtrate. Blue ring formation indicates nitrate.