

Handout of practical Lectures in Animal Nutrition

Directions and instructions about working in nutrition laboratory

Nutrition Laboratory is similar to chemistry laboratory. It contains chemical and glass wares, food analysis equipment's. Hence, such systems evoke certain instructions and directions which should strictly be followed by both personnel, staff, beginners as well as researchers to ensure their safety and security and to maintain and preserve the laboratory tools.

These Instructions can be emphasized in the following steps:

1. The working students must wear their special aprons during their work inside the lab. To keep their clothes, suit's, dresses and bodies away from contact and exposure to solutions and chemicals and harmful materials.
2. Strict a war ness and caution at using concentrated chemicals and glass wares to avoid them from breaking. Never change their taps or their indicating labels.
3. The glass wares must be thoroughly washed after their application and use. Never leave chemicals inside glass wares unwashed.
4. Chemicals, distilled water and burning gas should be consumed in the least quantities. Glass wares should be first washed by tap water and detergents followed by distilled water. These glass wares should be kept reserved until being dried or being kept in drying oven before their re use.
5. Each group of student should work in certain place of lab. To keep their places clean as well as their places and equipments. The student should read the procedures of each experiment carefully and should follow strictly the instructions regarding the required addition and concentration and period of time needed for each experiment. The students should bring their notebooks to record their measurements, weights, and the other notes about each experiment in special notebook for calculations and results.

Notebook: Students should work their experiment under supervision of their in charge lectures directly in the nutrition lab.

Tools, equipment's, and glass wares used in nutrition lab:-

1. Digital electrical scale:

Electrical scale is used for correct and proper device for accurate weights. Hence, the following steps should be carried out:-

- a. Put the scale on fixed , stable and unmovable table to prevent any agitation.
- b. Clean all parts of the scale before measurement using special small brush to remove debris, waste and dust specially those present on the scale.
- c. To open the instrument, press on the button "power", to tare the instrument press on the button "tar".
- d. Never handle the sample intended for weighing by hands because it negatively effects on their weights. So, special handlers are used for this purpose.
- e. Scaling process is carried out quickly with care to prevent the acquirement of the sample to climatic moisture weight is immediately recorded.
- f. Re-cleans the instrument after use from remains of the sample attached to the scale using special brush.
- g. The accuracy of the scale is (0.00) after the point.

2. The desiccator:

The relative humidity of food samples vary from time to other due to the climate. The moisture differs from time to another which causes large mistakes so such food samples should be placed in the desiccator to prevent these cases. The desiccator is a glass bowl having a strict closed- cover. The desiccator contains CaCl_2 , Which acts as moisture absorption.

The desiccator is widely used in nutrition lab. For various purpose e.g. cooling of the samples, keeping the tools before carrying out scaling. When food samples taken out from drying or burning ovens should be put in the desiccator.

The cover of the desiccator should not strictly closed because these hot samples cause extension of air inside the desiccator leading to push the cover with consequence of partial loss of the sample. The cover may be strictly closed after partial cooling of the sample. The sample should be preserved until being weighed.

Instruments used for volume measurement:

1. The Burette:

It is a thin glass cylinder with various capacities viz., 50 ml, 25 ml. the burette is closed from the bottom by a valve. Each one ml. is further subdivided in to (10) portions. Measurement followed by burette is up to 0.04- 0.05 ml and this amount is equal to one drop. (two drops in the burette equals one line).

The burette should be thoroughly washed before it's use by tap water and then by distilled water and finally by the solution intended for use in the test. The burette is quietly filled from the top using small glass funnel avoiding air bubbles formation inside the burette. The valve located at it's bottom is opened to ensure that it's full of solution when transparent solution is used in titration process, the reading is recorded when the solution is in lower surface (the concave surface of solution).

When coloured solution are used in titration process, the reading is recorded at the upper surface of the solution (the convex surface of the solution).

It is better to use white paper behind the reading area of the burette to prevent the leakage of light and to clarify the reading. Eye sight level should be horizontal at the area of reading.

2. pipette:

It is a standard slender graduate glass cylinder having narrow opening. It is used for measurement of fluids in tests and experiments. The thumb is used for regulating the evacuation of the intended volume.

There are two types of pipettes i.e standard pipette and graduate pipette. When the fluids are holding using pipette, the end of the pipette should be placed in the inner surface of the flask intended for conveying. It is advised not to blow the pipette in order to evacuate it. It is not necessary to evacuate the last drop of the pipette because the pipette is designed to hold the last drop.

Some pipettes have a swelling calling safety bubble which prevent the arrival of the solution to the mouth of the handler during the working.

3. Measuring flasks:-

It is a rounded glass flask having slender narrow neck. The volume of the flask is indicated by special mark. Measuring flasks are used to prepare certain standard solution or for their dilution. These flasks are not intended for heating or boiling solutions.

Also, hot solutions should not be put in these flasks because these operations may change their standard volumes. These changes are due to the fact that these flask are not manufactured from pyrex glass which is heat resistant and heat stable. There are many volumes of these flasks e.g. 100ml and 250 ml.

4. Conical flasks:

These are conical flask made from glass having broad bottom and slender opening. Usually, these flasks are used for dilution of stock and standard solutions. Also, it can be used as a receiving flask located bottom the burette or under the distiller.

5. Graduate cylinders:

It is a graduate glass cylinder and different volumes (10-1000ml). These cylinders are used in lab usually for preparing stock and standard solutions or for their dilutions