

Introduction

Histopathology is the microscopic examination of biological tissues to observe the appearance of diseased cells and tissues. The word histopathology is derived from a combination of three Greek words “**histos**” means “tissue”, “**pathos**” means “disease or suffering” and “**logos**” means “study”. Hence, histopathology is the study of microscopic changes or abnormalities in tissues that are caused as a result of diseases (Lambert *et al.*, 1976). Histopathological diagnosis is based on the pathological lesion in the tissues. It has great importance over other means of diagnosis as it is directly related to the tissues (Sheehan *et al.*, 1980).

Objectives

- To evaluate intestinal integrity and assess factors such as: Intestinal structure e.g. villus length, crypt depth, bacterial and parasitic infections, inflammatory conditions, etc.
- Helps to correlate the tissue changes with gross lesion and manifestation of clinical signs.
- Helps to know the stage, extent & severity of the disease or condition.
- Helps in differential diagnosis of disease or condition.

Procedure of Samples Collection

- Always take the samples from the same area of the gut.
- Take 1-2 cm CLOSED lengths and fix in 10% buffered formalin. Agitate in formalin to allow formalin to penetrate.
- Collect tissue within 5 minutes of euthanasia.
- Can also collect samples of liver and proventriculus

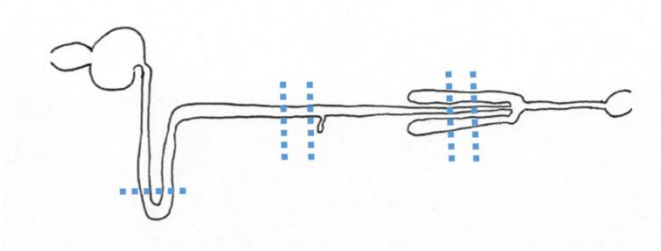


Figure: Gut samples collected for histopathology.

Equipment needed for sample collection

- Scissors, Scalpel, Forceps, Gloves, 10% buffered formalin with separate containers, permanent marker for identifying sample

Steps for making a Histopathological Slide

- Step 1** **Collection of tissue:** Collect tissues for histopathology as soon as possible after death of birds to avoid deterioration of tissues. Always take the samples from the same area of the gut.
- Step 2** **Fixation:** Then the collected tissue was fixed in 10% buffered formalin
- Step 3** **Trimming:** The tissues were cut thinly to prepare a block & placed in a jar with tag numbers for identification of organ.
- Step 4** **Processing of tissues:** The tissue was washed in running tape water overnight → tissues were dehydrated by ascending grades of alcohol → tissues were impregnated in paraffin → the tissues were embedded in melted paraffin → tissues were sectioned at 2-6 μm thickness with microtome → sectioned tissue was placed in a water bath → section was taken on grease free clean slide → the slide was air dried
- Step 5** **Routine Hematoxylin & eosin staining:** Finally the slides were ready for histopathological study under microscope



Fig: Collection of tissue



Fig: Tissue fix in formalin



Fig: Labeling of sample

Sending sample to the laboratory

Finally collected formalin fixed samples from the field send to the renowned laboratories in Pietermaritzburg, South Africa for Histopathological studies.

Sampling for Specific Diseases

Disease of Concern	Samples Needed
Enteritis (Coccidiosis, Bacterial load, Focal Duodenal Necrosis)	Portions of the Gastrointestinal tract affected
Infectious Laryngotracheitis (ILT)	Trachea, Larynx, Conjunctiva
Infectious Bursal Disease (IBD)	Bursa of Fabricious, Thymus
Marek's Disease Virus (MDV)	Sciatic Nerve, Brain, Eye, Tumors
Wet pox	Trachea, Larynx