

Histopathology: Points to consider

1. Histopathology remains a vital diagnostic tool. It can be the predominant diagnostic test, it may confirm presumptive diagnoses or it may assist the direction of other diagnostic tests by helping to identify the disease process e.g. inflammatory, parasitic, neoplastic or toxic.
2. Good practice to collect, fix and retain tissues in case needed.
3. Use 10% neutral buffered formol saline (there may be problems with the development of formalin pigment otherwise). An acceptable alternative is 10% formol saline.
4. **IMPORTANT:** 10 volumes formalin: 1 volume tissue.
5. Always discard cloudy formalin (indicates the formation of paraldehyde).
6. Fixation is slower in winter. Fixation is enhanced at temperatures above 15°C to a maximum of 50°C.
7. If tissue sample large, change formalin after 24 hours.
8. Timing - remove and fix tissues as soon after death as possible.
9. Always fix gut first but expect to be disappointed unless fixed within minutes of death. Exceptions are conditions with more chronic pathology in the deeper gut wall, e.g. Johne's disease and porcine proliferative enteropathy.
10. Avoid contaminating with body fluids, faeces etc. Gentle agitation of gut in fixative will help displace food material in the lumen, ensuring rapid surface fixation.
11. As general rule, 1cm thickness, no more, but long and wide enough to represent the tissue. Sections of lung and gastrointestinal tract can be thicker and gut tubes of 2 - 3 cm in length are satisfactory. However the brain is best fixed whole.
12. Take samples showing specific gross lesions. If focal lesions are visible sample both affected and adjacent normal tissue.
13. Routine sampling includes liver, kidney, spleen, lung, 5 pieces of intestine, (jejunum, ileum, ileocaecal valve, caecum and colon) and brain.

14. Handle tissues gently, do not squeeze between the fingers or crush with forceps. Do not wipe mucosal surfaces. Handle fresh intestine by the mesenteric attachment.
15. Ensure lung remains submerged—pack with wadding, e.g. paper towel.
16. Do not squeeze soft tissue into narrow-necked bottle. Solid when fixed!!
17. Always note distribution of lesions - especially important for gut and lung. Helpful to code samples accordingly, e.g. lung-triangular outline for cranial lobe, square outline for middle lobe and rectangular outline for caudal lobe.
18. If sacrificing an animal it must represent the problem. Ideally select acute cases untreated and typical of the clinical problem. Do not shoot CNS cases.
19. Ensure that the tissues contained within pots are identified on a label and send with a full history to assist with interpretation of findings.
20. When posting samples, packaging must comply with the Postal Regulations for pathological material. Samples sent by courier should be in leak proof containers. Send urgent cases immediately so that primary fixation occurs in transit. For less urgent material fix for 24 - 48 hours and then send wrapped in moist wadding and double bagged. In all cases ensure that no formalin liquid or its vapour can leak from the pots.

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