

Fundamentals of Histopathology: Decalcification

Histopathology · Answer Key · 15 Questions

1. What is the primary purpose of the decalcification process?

- A) To fix the tissue
- B) To remove inorganic calcium from organic matrices**
- C) To stain the collagen fibers
- D) To embed the tissue in paraffin

2. At what stage of the tissue processing workflow is decalcification performed?

- A) Before fixation
- B) After tissue embedding
- C) After fixation and before routine processing**
- D) After microtome sectioning

3. What is the recommended thickness for bone tissue slices to ensure optimal fixative penetration?

- A) 10-15 mm
- B) 2-6 mm**
- C) 0.1-0.5 mm
- D) 20-30 mm

4. Which of the following is a disadvantage of strong inorganic acids like nitric acid?

- A) They are too slow
- B) They cause excessive tissue swelling
- C) They can damage tissue antigens if used over 24-48 hours**
- D) They cannot be used for biopsy

5. What is the optimal pH range for EDTA to perform effectively as a chelating agent?

- A) pH 1-2
- B) pH 3-5
- C) pH 7.0-7.4**
- D) pH 12-14

6. Which type of specimen is most suitable for EDTA decalcification?

- A) Urgent diagnostic samples
- B) Specimens requiring immunohistochemistry or electron microscopy**
- C) Heavily mineralized cortical bone for same-day results
- D) Needle biopsies only

7. What phenomenon indicates the progress of decalcification in the 'bubble test'?

- A) Change in liquid color
- B) Formation of carbon dioxide gas bubbles on the bone surface**
- C) Precipitation of calcium oxalate
- D) Reduction in tissue weight

8. What is the main benefit of using the Calcium Oxalate chemical test?

- A) It is non-destructive to the tissue**
- B) It is instantaneous
- C) It works for EDTA without modification
- D) It is only for strong acids

9. What is a potential risk of over-decalcification?

- A) Tissue becomes too hard to cut
- B) Loss of nuclear staining (pinkish staining)**
- C) Increased enzyme activity
- D) Better DNA preservation

10. How can 'bone dust' artifacts be minimized during grossing?

- A) By using a blunt knife
- B) By using a fine-tooth saw and rinsing thoroughly**
- C) By skipping the washing step
- D) By increasing the fixation time

11. What is the corrective measure for a block that shows incomplete decalcification during microtomy?

- A) Discard the sample
- B) Surface decalcification**
- C) Increase the room temperature
- D) Re-fix in formalin

12. Why must formalin be thoroughly washed away before placing tissue in Hydrochloric acid?

- A) To prevent tissue hardening
- B) To avoid the production of carcinogenic gas**
- C) To improve staining quality
- D) To speed up the process

13. Which factor accelerates the decalcification process but risks tissue damage?

- A) Lowering the temperature
- B) Increasing the concentration**
- C) Using EDTA
- D) Reducing agitation

14. What is the main disadvantage of the physical probing method for end-point testing?

- A) It requires expensive equipment
- B) It is highly subjective and causes tissue artifacts**
- C) It takes too long
- D) It is only for soft tissues

15. Why is agitation recommended during the decalcification process?

- A) To cool the solution
- B) To increase fluid exchange and calcium removal**
- C) To prevent the formation of bubbles
- D) To fix the proteins