
Rapid Decalcifying Solution (for Histopathology)

Cat. No.: R1525472 | Pack size: 500 mL | Storage: Room temperature

Overview

In pathological experiments, bone tissue and other calcium-containing tissues cannot be directly sectioned due to high hardness. Calcium must be removed to soften tissues prior to section preparation. Common decalcifying reagents include EDTA, organic acids and inorganic acids. EDTA is a mild chelating decalcifier: it binds to calcium on the outer layer of hydroxyapatite crystals to form soluble nonionic compounds, and drives the outward migration of bound calcium inside the crystals. This continuous reaction gradually dissolves hydroxyapatite crystals, and chelation can be achieved under neutral pH conditions.

Rapid Decalcification Solution (for Histopathology) is composed of 5% formic acid and deionized water, specially designed for rapid decalcification of routine pathological specimens. It dissolves calcium via organic acid acidity, delivering relatively fast decalcification yet causing certain damage to tissue structure. Decalcification duration varies by tissue type and generally takes 1 to 7 days. This reagent may degrade tissue proteins; EDTA decalcification is recommended if subsequent antigen immunoassays are required.

User-Supplied Materials

PBS buffer, distilled water, heating device or microwave oven, dedicated glass containers for decalcification, 4% paraformaldehyde fixative.

Operating Procedures (For Reference Only):

1. Do not cut bone tissue into overly thick specimens; the recommended thickness is approximately 5 mm.
2. Immerse the tissue in sufficient 4% paraformaldehyde fixative for fixation for at least 24 hours, then rinse with distilled water 3 times for 20 minutes per wash.
3. Transfer the tissue into Rapid Decalcification Solution (For Histopathology) at a volume ratio of 1:15 ~ 1:20 for decalcification over 1~2 days or longer. Replace with fresh decalcification solution regularly during treatment. The decalcification endpoint is reached when the tissue softens and can be flexed elastically and easily by hand.

To accelerate decalcification, incubate samples at 37°C. Microwave-assisted rapid decalcification is also available: set the microwave power to around 200 W and heat for 5 minutes per cycle. Repeat heating 3 to 5 times according to tissue thickness and density, with a 3~5 minute interval between cycles.

4. Rinse the tissue thoroughly with distilled water, then perform standard dehydration and embedding.

Precautions:

1. This product is acidic and volatile. Operate in a well-ventilated area with proper personal protection to prevent inhalation.
2. Decalcification time differs among tissue types. Closely monitor specimen status throughout the process to avoid over-decalcification, which damages tissues and compromises downstream experiments.
3. A 5 mm-thick bone tissue block typically finishes decalcification within 0.5~2 days, while larger specimens require 2~7 days.
4. Moderate heating speeds up decalcification; the temperature should not exceed 37~40°C. Excessively high temperature will loosen and disintegrate bone tissue, and the temperature must never go above 60°C.
5. Ensure thorough decalcification to prevent under-decalcification or over-decalcification. Optimize processing time to guarantee qualified sectioning while minimizing tissue damage from prolonged decalcification.
6. Avoid metal vessels for decalcification; glass containers are preferred.
7. Bone tissue should be fixed before decalcification, or fixation and decalcification may be carried out simultaneously. Decalcification prior to fixation is forbidden to reduce tissue damage.
8. Wear a lab coat and disposable nitrile gloves during operation for personal safety and health.
9. This reagent is limited to scientific research and shall not be used for clinical diagnosis or other uses.

Appendix:

Determination of Decalcification Endpoint (Physical Method):Puncture, pinch or clamp the tissue. Terminate decalcification once the bone tissue softens or no resistance is felt during needle puncture. This physical inspection may impair tissue architecture, so avoid excessive force or repeated testing.

Specifications

Item	Information
Specifications & Purity	BioReagent
Stability And Storage	Store at room temperature long term (12 months).
Storage	Room temperature

Shipped In	Normal
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Limitations & Disclaimer

- ☐ For Research Use Only (RUO). Not for use in human or animal diagnostics, therapeutics, or in vivo applications. Not for food, cosmetic, or household use.
- ☐ This product is not a CE-marked in vitro diagnostic device under IVDR (EU) 2017/746 and is not an FDA-cleared device under 21 CFR. Use is restricted to verified businesses, institutions, and qualified professionals for research and development purposes.
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