Postgraduate Certificate in Embalming Chemistry (United Kingdom)

Embalming Fluid Formulation

Aldehyde
Concept: Primary preservative agent in most embalming fluids.
Related terms: formaldehyde, glutaraldehyde.
Explanation: Aldehydes cross-link protein amino groups, stabilising tissue architecture. Example: 4% formaldehyde solution is standard for short-term preservation. Challenges include tissue rigidity and health risks from inhalation.

Alkaline buffer
Concept: Solution used to adjust pH of embalming fluid.
Related terms: phosphate buffer, carbonate system.
Explanation: Maintains fluid pH between 6.5 and 8.0, optimising aldehyde reactivity and reducing tissue discoloration. Practical use: adding sodium bicarbonate to achieve desired pH. Over-buffering can cause tissue swelling.

Anaerobic preservation
Concept: Technique relying on low-oxygen environments to inhibit microbial growth.
Related terms: vacuum sealing, nitrogen flushing.
Explanation: Used for specimens requiring long-term storage without aldehydes. Example: storing organs in nitrogen-purged containers. Challenges include ensuring complete oxygen removal and monitoring for anaerobic bacterial proliferation.

Arterial embalming
Concept: Delivery of fluid into the arterial system to distribute preservative.
Related terms: arterial injection, cavernous sinus.
Explanation: Fluid travels with blood flow, reaching capillaries. Practical steps: cannulating the carotid artery, controlling flow rate. Risks include incomplete perfusion if arterial clots are present.

Arterial injection
Concept: Specific method of introducing embalming fluid into arteries.
Related terms: arterial embalming, venous drainage.
Explanation: Utilises a pump to maintain pressure, typically 30-45 mmHg. Example: injecting 2 L of fluid for an average adult. Common challenge: avoiding over-pressurisation that can cause tissue rupture.

Arterial pressure
Concept: The hydrostatic pressure applied during fluid injection.
Related terms: pump settings, vascular resistance.
Explanation: Proper pressure ensures fluid reaches distal tissues without extravasation. Typical range: 30-45 mmHg. Adjustments may be needed for atherosclerotic vessels.

Arterial system
Concept: Network of arteries delivering oxygenated blood (and embalming fluid).
Related terms: aorta, carotid artery.
Explanation: Understanding major branches aids in selecting injection sites. Example: using the femoral artery for lower limb preservation. Complications arise from arterial calcification.

Artemisinin
Concept: Plant-derived compound occasionally explored as a preservative additive.
Related terms: natural preservative, antimicrobial agent.
Explanation: Exhibits mild antimicrobial activity but limited cross-linking ability. Currently experimental; main challenge is regulatory approval for mortuary use.

Asphyxiant chemicals
Concept: Substances that can depress the respiratory system when inhaled.
Related terms: formaldehyde vapour, glutaraldehyde fumes.
Explanation: Safety protocols require ventilation and respiratory protection. Example: using fume hoods during fluid preparation. Failure to control exposure can lead to health hazards.

Aqueous phase
Concept: Water-based component of embalming fluid.
Related terms: solvent system, hydrophilic additives.
Explanation: Determines fluid viscosity and aids in distributing soluble preservatives. Example: adding 10 % glycerol to improve fluid flow. Excess water may dilute preservative concentration.

Arsenic compounds
Concept: Historical preservatives now largely prohibited.
Related terms: arsine gas, toxic heavy metals.
Explanation: Provided long-term preservation but posed severe health risks. Modern regulations in the UK forbid their use. Understanding legacy cases helps in forensic analysis.

Autolysis inhibition
Concept: Preventing self-digestion of cells after death.
Related terms: enzyme denaturation, preservative action.
Explanation: Aldehyde fixation blocks lysosomal enzymes, slowing autolysis. Example: rapid injection of fluid within 2 hours post-mortem reduces tissue breakdown. Delayed embalming increases autolysis severity.

Back-pressure valve
Concept: Device regulating fluid flow during injection.
Related terms: pump regulator, pressure control.
Explanation: Prevents excessive pressure that could damage vessels. Practical use: setting valve to 35 mmHg for average adult. Malfunction may cause fluid leakage.

Barbiturate additives
Concept: Sedatives occasionally incorporated to reduce post-mortem rigor.

Related terms: phenobarbital, sedative effect.
Explanation: Low concentrations can relax muscles, facilitating positioning. Example: 0.5 % phenobarbital in fluid. Over-use may cause excessive tissue softening.

Base-catalysed hydrolysis
Concept: Chemical reaction where a base accelerates breakdown of compounds.
Related terms: alkaline hydrolysis, pH adjustment.
Explanation: In embalming, high pH can degrade aldehydes, reducing effectiveness. Maintaining neutral pH avoids this issue.

Bleaching agents
Concept: Chemicals used to lighten tissue discoloration.
Related terms: hydrogen peroxide, sodium hypochlorite.
Explanation: Applied after fixation to improve cosmetic appearance. Example: 3 % hydrogen peroxide spray on facial tissues. Over-use may cause tissue brittleness.

Blood-borne pathogens
Concept: Infectious agents transmitted via blood.
Related terms: HIV, HBV, HCV.
Explanation: Embalming staff must use universal precautions. Use of preservative fluid can inactivate many pathogens, but proper PPE remains essential.

Buffer capacity
Concept: Ability of a solution to resist pH change.
Related terms: alkaline buffer, acidic buffer.
Explanation: High buffer capacity maintains optimal pH during fluid-tissue interaction. Example: 0.1 M phosphate buffer offers robust control. Insufficient capacity leads to pH drift and reduced fixation.

Bronchial artery embalming
Concept: Targeted injection into the bronchial arteries for thoracic preservation.
Related terms: lung fixation, arterial injection.
Explanation: Improves lung tissue rigidity and colour. Practical tip: use a 20-gauge catheter and low pressure to avoid alveolar rupture. Challenges include navigating small arterial branches.

Calcium chelation
Concept: Binding of calcium ions to prevent tissue hardening.
Related terms: EDTA, softening agents.
Explanation: EDTA (0.5 % w/v) added to fluid can reduce calcification in vascular tissues. Over-chelation may weaken structural integrity.

Carboxylate preservatives
Concept: Organic salts that provide antimicrobial activity.
Related terms: propionate, acetate.
Explanation: Often used as secondary preservatives. Example: sodium acetate (1 %) improves fluid stability.

Limited effect on protein fixation.

Carotid artery
Concept: Major cervical artery commonly used for embalming injection.
Related terms: arterial embalming, cavernous sinus.
Explanation: Accessible location and direct flow to head. Procedure: isolate and cannulate the artery, secure with a clamp. Anatomical variations may require alternative sites.

Cellular fixation
Concept: Chemical process that stabilises cell structures.
Related terms: aldehyde cross-linking, protein denaturation.
Explanation: Aldehydes react with amino groups, forming methylene bridges. Resulting tissue retains morphology for viewing and dissection. Inadequate fixation leads to tissue degradation.

Centifugal separation
Concept: Technique to remove particulate matter from fluid.
Related terms: filtration, clarification.
Explanation: Spinning fluid at 3000 rpm for 10 minutes yields clear solution, preventing clogging of injection lines. Requires appropriate equipment and safety measures.

Chemical stabiliser
Concept: Additive that prolongs shelf-life of embalming fluid.
Related terms: antioxidant, preservative.
Explanation: Examples include sodium metabisulphite (0.2 %) to prevent aldehyde oxidation.
Over-stabilisation may reduce fluid reactivity.

Chromatic correction
Concept: Adjusting fluid composition to achieve desired tissue colour.
Related terms: pigment additives, bleaching agents.
Explanation: Adding small amounts of red or blue dyes can counteract pallor. Example: 0.05 % red dye for a healthier complexion. Requires precise dosing to avoid unnatural hues.

Citric acid buffer
Concept: Acidic buffer system used in fluid formulation.
Related terms: pH adjustment, buffer capacity.
Explanation: Provides pH 4-5 range for specific preservation protocols. Often combined with sodium citrate. Excess acid can cause tissue softening.

Clotting agents
Concept: Substances that promote blood coagulation during embalming.
Related terms: thrombin, hemostatic powders.
Explanation: Used to prevent blood pooling that interferes with fluid distribution. Example: topical thrombin applied to wound sites. Must be used judiciously to avoid blockage of vessels.

Coagulation inhibition

Concept: Preventing blood clot formation to ensure fluid flow.
Related terms: anticoagulants, heparin.
Explanation: Heparin (500 IU L^{-1}) added to fluid reduces clotting. Balancing anticoagulation prevents both clots and excessive bleeding.

Cold-induced fixation
Concept: Using low temperatures to aid preservative penetration.
Related terms: refrigeration, cryopreservation.
Explanation: Cooling the body to 4 °C prior to injection slows autolysis, allowing fluid to act more effectively. Practical limitation: availability of refrigeration facilities.

Collagen cross-linking
Concept: Chemical bonds formed between collagen fibers during fixation.
Related terms: aldehyde fixation, tissue rigidity.
Explanation: Increases tensile strength, essential for handling during viewing. Over-cross-linking can make tissue brittle and difficult to dissect.

Colorimetric indicator
Concept: Dye that changes hue with pH or oxidation state.
Related terms: phenol red, pH strip.
Explanation: Added to fluid (0.02 %) to monitor pH changes during preparation. Provides visual cue for quality control. Must be stable under preservative conditions.

Combined arterial-cavernous embalming
Concept: Simultaneous injection into arterial and cavernous sinus systems.
Related terms: cavernous sinus embalming, dual-route perfusion.
Explanation: Enhances facial tissue fixation, especially for delicate features. Requires coordinated pump control to balance pressures. Complexity increases risk of over-pressurisation.

Compounding safety
Concept: Procedures to protect staff during fluid preparation.
Related terms: PPE, fume extraction.
Explanation: Use of gloves, goggles, and ventilated hoods reduces exposure to toxic chemicals. Regular training and incident reporting are essential components.

Concentration gradient
Concept: Difference in preservative concentration between fluid and tissue.
Related terms: diffusion, osmotic pressure.
Explanation: Drives movement of aldehydes into cells. Maintaining appropriate gradient ensures effective fixation. High viscosity fluids may reduce gradient efficiency.

Cross-link density
Concept: Measure of the number of chemical bridges formed in tissue.
Related terms: collagen rigidity, tissue elasticity.

Explanation: Determined by aldehyde concentration and exposure time. Higher density yields firmer tissue but may impede later dissection.

Cyanoacrylate adhesives
Concept: Fast-curing glues occasionally used for wound closure post-embalming.
Related terms: tissue sealing, surface bonding.
Explanation: Provides cosmetic repair of incisions. Must be used sparingly to avoid interfering with later autopsy or forensic analysis.

Decomposition gases
Concept: Volatile compounds released during autolysis.
Related terms: methanethiol, hydrogen sulfide.
Explanation: Their presence indicates inadequate preservation. Proper fluid formulation reduces gas production. Monitoring gas levels can guide post-mortem handling.

Dehydration control
Concept: Managing loss of water from tissues during preservation.
Related terms: humectants, glycerol.
Explanation: Adding glycerol (5-10 %) helps retain moisture, preventing tissue shrinkage. Excessive dehydration leads to brittleness.

Denaturation temperature
Concept: Temperature at which proteins unfold.
Related terms: thermal fixation, heat-induced coagulation.
Explanation: Aldehyde fixation lowers the denaturation temperature, allowing preservation at lower ambient temperatures. Knowledge assists in planning for high-temperature environments.

Dermal pigmentation
Concept: Colour of skin after embalming.
Related terms: melanin retention, pigment additives.
Explanation: Aldehyde can cause skin to appear pale; adding melanin-based pigments can restore natural tone. Requires careful matching to donor ethnicity.

Disinfection protocol
Concept: Steps to sterilise equipment and work surfaces.
Related terms: surface decontamination, chemical sanitiser.
Explanation: Use of 1 % sodium hypochlorite solution after each case reduces cross-contamination. Adequate contact time (10 min) is essential.

Distillation purification
Concept: Removing impurities from fluid components via heating.
Related terms: fractional distillation, solvent recovery.
Explanation: Applied to water and alcohol fractions to achieve high purity. Requires closed systems to prevent aldehyde loss.

Dual-phase emulsion
Concept: Mixture of oil-based and water-based components in fluid.
Related terms: surfactant, emulsifier.
Explanation: Improves distribution of lipophilic additives such as essential oils. Example: 0.5 % Tween-80 used as emulsifier. Stability may be compromised over time.

Dyspnea risk
Concept: Potential for respiratory distress among staff due to vapour exposure.
Related terms: asphyxiant chemicals, ventilation.
Explanation: Monitoring ambient aldehyde levels (Effective dosage
Concept: Amount of preservative needed per kilogram of body weight.
Related terms: dose calculation, fluid volume.
Explanation: Standard practice: 5-7 mL kg^{-1} of fluid. Adjustments made for body composition, time since death, and desired preservation length.

Embalming fluid viscosity
Concept: Measure of fluid's resistance to flow.
Related terms: thickening agents, shear rate.
Explanation: Viscosity influences injection pressure and capillary penetration. Glycerol (10 %) raises viscosity; excessive thickness may impede arterial perfusion.

Emulsion stability
Concept: Ability of a mixed-phase fluid to resist separation.
Related terms: surfactant concentration, temperature.
Explanation: Maintaining stable emulsion ensures uniform distribution of additives. Stirring and temperature control are key.

Enzyme inactivation
Concept: Halting activity of lysosomal enzymes post-mortem.
Related terms: autolysis inhibition, aldehyde fixation.
Explanation: Aldehyde reacts with enzyme active sites, reducing tissue breakdown. Incomplete inactivation leads to localized autolysis.

Essential oil additives
Concept: Natural compounds added for scent or antimicrobial effect.
Related terms: eugenol, lavender oil.
Explanation: Small amounts (0.1-0.3 %) can mask formaldehyde odour and provide mild antimicrobial action. Potential for allergic reactions necessitates testing.

Ethylene glycol
Concept: Humectant sometimes incorporated to retain moisture.
Related terms: glycerol, hydrophilic additive.
Explanation: Improves tissue pliability. Concentrations above 5 % may cause excessive softness.

Exothermic reaction
Concept: Heat-producing chemical interaction during fluid preparation.
Related terms: aldehyde polymerisation, temperature control.
Explanation: Mixing formaldehyde with strong bases can release heat; cooling jackets prevent overheating. Monitoring temperature safeguards product quality.

Formaldehyde
Concept: Most widely used aldehyde preservative.
Related terms: paraformaldehyde, glutaraldehyde.
Explanation: Acts by forming methylene bridges with tissue proteins. Typical concentration: 4-7 % v/v. Health hazards include carcinogenicity; engineering controls mandatory.

Formaldehyde polymerisation
Concept: Conversion of monomeric formaldehyde to polymeric paraformaldehyde.
Related terms: paraformaldehyde, exothermic reaction.
Explanation: Polymerisation reduces active aldehyde concentration, diminishing preservative efficacy. Adding stabilisers and maintaining low temperature limits this process.

Formaldehyde scavengers
Concept: Compounds that bind free formaldehyde to reduce vapour.
Related terms: amine buffers, hydroxylamine.
Explanation: Used in low-odor formulations. Example: 0.5 % hydroxylamine added to fluid. Must not interfere with fixation.

Fume extraction
Concept: Mechanical removal of vapours from work area.
Related terms: ventilation, local exhaust.
Explanation: Essential for controlling aldehyde levels. Systems should achieve at least 15 air changes per hour. Regular maintenance ensures effectiveness.

Glutaraldehyde
Concept: Dialdehyde offering stronger cross-linking than formaldehyde.
Related terms: aldehyde fixation, biocidal activity.
Explanation: Used at 2-4 % for high-level preservation; provides firmer tissue but can cause increased rigidity. Requires careful handling due to irritancy.

Hardening agents
Concept: Substances that increase tissue firmness post-embalming.
Related terms: aldehyde cross-linking, tissue rigidity.
Explanation: Sodium borate (0.5 %) can be added to promote firmness in extremities. Excess leads to brittle tissue.

Hemoglobin oxidation
Concept: Chemical alteration of blood pigment during preservation.

Related terms: methemoglobin formation, colour change.
Explanation: Aldehyde can oxidise hemoglobin, turning blood brown. Use of reducing agents (e.g., ascorbic acid 0.1 %) can maintain a natural red hue.

Hemostasis
Concept: Process of stopping blood flow.
Related terms: clotting agents, coagulation inhibition.
Explanation: Achieved through mechanical compression, topical agents, or anticoagulants in the fluid. Proper hemostasis ensures uniform fluid distribution.

Hydration balance
Concept: Managing water content in embalmed tissues.
Related terms: dehydration control, humectant addition.
Explanation: Adding glycerol or propylene glycol (5-10 %) helps maintain tissue turgor. Monitoring is crucial for cosmetic outcomes.

Hydrophilic additive
Concept: Water-soluble component that modifies fluid properties.
Related terms: humectant, viscosity modifier.
Explanation: Examples include glycerol, propylene glycol. They increase fluid stability and improve tissue pliability.

Hydrophobic additive
Concept: Oil-soluble component incorporated for specific effects.
Related terms: essential oil additive, lipid solubiliser.
Explanation: Used to introduce fragrance or antimicrobial properties. Requires emulsification for uniform distribution.

Ice-cold injection
Concept: Performing arterial injection with chilled fluid (≈4 °C).
Related terms: cold-induced fixation, temperature control.
Explanation: Slows autolysis during perfusion, enhancing preservative penetration. Requires pre-chilling of fluid and insulated tubing.

Infection control
Concept: Preventing transmission of disease during embalming.
Related terms: PPE, disinfection protocol.
Explanation: Includes hand hygiene, use of barriers, and proper waste disposal. Regular audits ensure compliance.

Injection pressure monitoring
Concept: Real-time assessment of pressure during fluid delivery.
Related terms: arterial pressure, back-pressure valve.
Explanation: Digital pressure gauges provide feedback to avoid over-pressurisation. Alarms can be set at

50 mmHg.

Irreversible fixation
Concept: Permanent cross-linking that cannot be undone.
Related terms: aldehyde fixation, tissue rigidity.
Explanation: Achieved with high aldehyde concentrations; limits subsequent histological processing but provides long-term stability.

Isotonic solution
Concept: Fluid with osmolarity similar to body fluids (~300 mOsm L^{-1}).
Related terms: buffer system, humectant balance.
Explanation: Prevents cellular swelling or shrinkage during perfusion. Adjusted with salts such as NaCl.

Keratin preservation
Concept: Maintaining integrity of hair, nails, and skin.
Related terms: collagen cross-linking, hardening agents.
Explanation: Aldehyde penetrates keratin structures, stabilising them. Adding mild surfactants can aid penetration.

Kinetic stabiliser
Concept: Substance that slows chemical reactions in fluid.
Related terms: chemical stabiliser, exothermic reaction.
Explanation: Sodium metabisulphite (0.2 %) reduces aldehyde polymerisation over time. Must be balanced to avoid excessive inhibition.

Latex gloves
Concept: Protective barrier for hands.
Related terms: PPE, chemical resistance.
Explanation: Recommended for routine handling; nitrile gloves preferred for aldehyde exposure due to superior resistance.

Lipid solubilisation
Concept: Dissolving lipophilic substances in fluid.
Related terms: emulsion stability, surfactant.
Explanation: Use of non-ionic surfactants (e.g., polysorbate 80) facilitates incorporation of essential oils. Over-use can destabilise fluid.

Low-odor formulation
Concept: Fluid designed to minimise formaldehyde smell.
Related terms: formaldehyde scavengers, essential oil additives.
Explanation: Combining aldehyde with scavengers and fragrance agents reduces odor to Magnesium sulfate
Concept: Salt added to adjust ionic strength.
Related terms: buffer capacity, osmolarity.
Explanation: 0.5 % w/v improves fluid stability and can aid in tissue swelling control. Excess can cause tissue

hardening.

Maintenance of equipment
Concept: Regular servicing of pumps, filters, and storage tanks.
Related terms: disinfection protocol, fume extraction.
Explanation: Prevents contamination, ensures accurate pressure delivery, and prolongs equipment lifespan. Scheduled monthly checks recommended.

Mass balance
Concept: Accounting for all fluid components during formulation.
Related terms: effective dosage, concentration calculation.
Explanation: Ensures final product meets specified percentages. Errors can lead to sub-optimal preservation or safety hazards.

Mechanical agitation
Concept: Stirring or shaking fluid to achieve homogeneity.
Related terms: emulsion stability, centrifugal separation.
Explanation: Use of magnetic stirrers at 200 rpm for 10 minutes promotes uniform distribution of additives. Over-agitation may introduce air bubbles.

Microbial load reduction
Concept: Decreasing number of viable microorganisms in fluid.
Related terms: biocidal activity, glutaraldehyde.
Explanation: Aldehyde concentration of 4 % typically reduces bacterial counts by >99.9 %. Additional disinfectants may be employed for high-risk cases.

Monomeric aldehyde
Concept: Single aldehyde molecules active in fixation.
Related terms: formaldehyde polymerisation, active preservative.
Explanation: Desired form for optimal cross-linking. Monitoring via spectrophotometry can assess monomer levels.

Mortuary ventilation
Concept: Airflow system designed to remove hazardous vapours.
Related terms: fume extraction, air exchange rate.
Explanation: Must achieve ≥ 12 air changes per hour; include carbon-filter units for aldehyde capture. Regular testing ensures compliance with occupational standards.

Natural preservative research
Concept: Investigation of plant-derived compounds as alternatives.
Related terms: essential oil additives, arsenic compounds.
Explanation: Focus on antimicrobial efficacy and reduced toxicity. Current trials show limited fixation compared with aldehydes.

Neurovascular fixation

Concept: Preservation of brain and associated vessels.
Related terms: arterial injection, cerebral perfusion.
Explanation: Requires higher pressure (50-60 mmHg) and sometimes separate cranial injection to ensure adequate brain fixation. Over-pressurisation can cause edema.

Non-ionic surfactant
Concept: Surface-active agent without charge.
Related terms: emulsion stability, lipid solubilisation.
Explanation: Polysorbate 80 (0.5 %) aids incorporation of essential oils and improves fluid spread. Must be compatible with aldehyde chemistry.

Ocular preservation
Concept: Specific techniques for maintaining eye appearance.
Related terms: cavernous sinus embalming, corneal fixation.
Explanation: Injection of a low-viscosity fluid directly into the ophthalmic artery improves scleral clarity. Use of a gentle pressure (20 mmHg) prevents globe rupture.

Osmotic pressure
Concept: Force driving fluid movement across membranes.
Related terms: concentration gradient, isotonic solution.
Explanation: Balanced osmolarity avoids cellular swelling or shrinkage. Adjusted by adding salts or sugars.

Oxidation-reduction potential
Concept: Measure of a solution's tendency to gain or lose electrons.
Related terms: chemical stabiliser, formaldehyde scavengers.
Explanation: Maintaining a slightly reducing environment (– 100 mV) helps preserve aldehyde activity. Antioxidants such as sodium metabisulphite assist.

pH indicator
Concept: Substance that changes colour with pH variation.
Related terms: colorimetric indicator, buffer capacity.
Explanation: Phenol red (0.02 %) provides visual cue; red at pH 7–8, yellow below pH 6.5. Useful for quick quality checks.

Phenolic disinfectant
Concept: Antimicrobial agent containing phenol groups.
Related terms: disinfection protocol, surface decontamination.
Explanation: 0.5 % phenol solution used for equipment cleaning. Effective against a broad spectrum of microbes but corrosive to some metals.

Polyethylene glycol (PEG)
Concept: Polymer used as humectant and stabiliser.
Related terms: hydrophilic additive, viscosity modifier.
Explanation: PEG-400 (5 %) improves fluid retention and reduces tissue desiccation. High concentrations

may increase viscosity excessively.

Polymerisation inhibitor
Concept: Chemical that prevents monomer linking.
Related terms: kinetic stabiliser, exothermic reaction.
Explanation: Hydroquinone (0.05 %) added to formaldehyde solutions reduces polymerisation, maintaining active aldehyde levels.

Preservative synergy
Concept: Combined effect of multiple agents exceeding individual actions.
Related terms: glutaraldehyde, essential oil additives.
Explanation: Adding 0.2 % glutaraldehyde to a formaldehyde base can improve antimicrobial spectrum while lowering overall aldehyde concentration needed.

Preservative toxicity
Concept: Harmful effects of chemicals on human health.
Related terms: asphyxiant chemicals, PPE.
Explanation: Formaldehyde classified as a carcinogen; exposure limits set at 0.75 ppm (8-hour TWA). Strict adherence to safety protocols required.

Pressure-controlled pump
Concept: Device that maintains set injection pressure.
Related terms: back-pressure valve, injection pressure monitoring.
Explanation: Electronic pumps can be programmed to 35 mmHg with automatic shut-off. Calibration before each case ensures accuracy.

Procaine hydrochloride
Concept: Local anaesthetic sometimes added to reduce post-mortem stiffening.
Related terms: muscle relaxant, sedative additives.
Explanation: 0.5 % solution can soften muscle tissue, facilitating positioning. Must be balanced to avoid excessive tissue laxity.

Protein denaturation
Concept: Unfolding of protein secondary and tertiary structures.
Related terms: aldehyde fixation, thermal fixation.
Explanation: Aldehyde induces partial denaturation, exposing reactive groups for cross-linking. Over-denaturation results in loss of tissue detail.

Propylene glycol
Concept: Humectant similar to glycerol.
Related terms: hydrophilic additive, viscosity modifier.
Explanation: 5 % addition helps retain moisture without significantly increasing viscosity. May impart a slight sweetness to fluid scent.

Purification of water

Concept: Removing contaminants from the aqueous component.
Related terms: distillation purification, filtration.
Explanation: Use of deionised water reduces mineral content that could affect buffer performance. Critical for high-purity formulations.

Quaternary ammonium compounds
Concept: Cationic disinfectants used in equipment cleaning.
Related terms: phenolic disinfectant, surface decontamination.
Explanation: 0.1 % benzalkonium chloride effective against enveloped viruses. Not suitable for direct addition to embalming fluid due to potential tissue staining.

Radiation safety
Concept: Protecting staff from ionising radiation when embalming radiologically examined bodies.
Related terms: protective shielding, dosimetry.
Explanation: Use lead aprons and monitor exposure with badge dosimeters. Not directly related to fluid chemistry but part of comprehensive practice.

Refrigerated storage
Concept: Keeping prepared fluid at low temperature to extend shelf life.
Related terms: cold-induced fixation, temperature control.
Explanation: Storing at 4 °C slows aldehyde degradation