



PREPARATION OF EMBALMING, WETTING AND STORAGE FLUIDS

DEPT OF CLINICAL ANATOMY

LMMS

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What is Embalming?

Process used for preserving human bodies indefinitely. Embalming of cadavers in a teaching and learning environment is essential to prevent the putrefaction of the body and hence to increase the timespan in which the cadaver can be used for academic teaching or research.

Changes that occur following death

Changes in the human body after death cannot be stopped but the can be slowed down by lowering the body temperature to +/- -4 deg Celsius

These changes that occur are:

Autolytic- where the enzymatic actions continue as if the body is alive

Microorganism invasion- where the bacteria in the alimentary canal multiply rapidly causing discoloration on the abdomen and consequent putrefaction .

Embalming chemicals

Embalming chemicals are a variety of preservatives ,sanitizing and disinfectant agents and additives used in modern embalming to temporarily prevent decomposition and restore natural appearance for viewing a body after death.

A mixture of these chemicals is known as embalming fluids and is used to preserve cadavers, sometimes only until the funeral or for teaching and research.

Embalming fluids used in the past

Prior to the advent of the modern range of embalming chemicals a variety of alternative additives have been used by embalmers, including Epsom salts and milk but these are of limited effectiveness.

During the America Civil war , the Union Army, wanting to transport slain soldiers from the battlefields back home for burial ,consulted with Dr Thomas Holmes who developed a technique that involved the draining of the corpses blood and embalming it with a fluid made of arsenic for preservation.

Embalming fluids used presently

Typically embalming fluids contain a mixture of formaldehyde, alcohol, and other solvents.

Main constituents of embalming fluid are :

Fixative- eg alcohol and formaldehyde

Bacterio-fungistatic and cidal property eg Phenol

Moisture retaining property (prevents bodies drying eg Glycerine

Pleasant odour during dissection eg sweet cherry

Composition of Embalming Fluid

Absolute alcohol	- 70 L
Formalin	- 5L
Phenol (liquefied)	- 2.5L
Glycerine	- 1.0L
Cherry	-1.5L
Water	- 20L

Mechanism of action of Embalming Fluid

Embalming fluid acts to 'fix' (denature) cellular proteins, meaning that they cannot act as a nutrient source bacteria, embalming fluid also kills the bacteria themselves.

Formaldehyde fixes tissue or cells by irreversibly connecting a primary amine group in a protein molecule with a nearby nitrogen in a protein or DNA molecule through a $-CH_2-$ linkage called a Schiff base. The end result also creates the simulation, via colour changes, of the appearance of blood flowing under the skin.

Wetting Fluid

The cadaver being used by students **HAVE** to be kept moist by spraying them with 'wetting' fluid at least twice a week.

Composition of wetting fluid

2.5 L liquefied phenol

1 L cherry

1 L glycerine

200 L water

Composition of storage fluid

Specimens set aside for special dissection are stored in plastic containers with 'storage fluid'.

Composition of storage fluid

2.5L liquefied phenol

1.1L glycerine

200L water

Prosections (special dissected specimens) are stored indefinitely in this storage fluid in specially manufactured steel tanks. storage fluid is replaced periodically once discolored.