

preparation of preservatives and fixatives for mounted slides

Formalin Fixative

For histology the standard preferred fixative is 10% neutral buffered formalin (NBF). This is best purchased as a prepared solution and avoids any additional risks of handling needed to mix the NBF yourself from stock solutions.

Making 10% Neutral Buffered Formalin from stock solutions

Where only a standard stock solution of formalin is available it is typically 37-40% formaldehyde (a gas) in aqueous solution and unbuffered. To make a histological fixative from this we need a 10% solution of this stock formalin i.e. 1 part of the stock formalin with 9 parts water, preferably distilled, which will have a pH of 3-4. If used unbuffered the acidity can react with haemoglobin in the tissues to produce dark brown acid formaldehyde haematin precipitates, which complicate histological interpretation.

To adjust the 10% formalin solution to a neutral pH you would need to mix in quantities of a buffer, typically sodium phosphate.

A recommended recipe is as follows:

100ml Formalin (37-40% stock solution)

900ml Water

Stage 4/ Lab four

By Hanan Faisal

4g/L NaH_2PO_4 (monobasic)

6.5g/L Na_2HPO_4 (dibasic/anhydrous)

10% formalin can also be referred to as formal or formol.

* Formalin is formaldehyde gas dissolved in water and reaches saturation at 37-40%

formaldehyde. This can therefore be regarded as 100% formalin

** 10% formalin actually represents 10% of the 37-40% stock solution. The actual amount of dissolved formaldehyde in the 10% formalin is therefore only 3.7-4.0%.

PVA polyvinyl alcohol as fixative

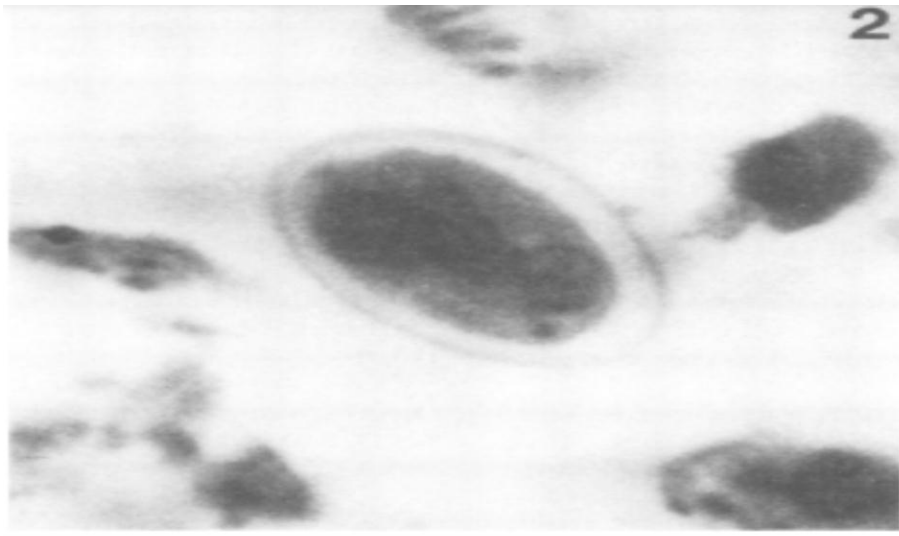
Polyvinyl alcohol (PVA) containing the fixative mercuric chloride is considered the "gold standard" for the fixation of ova and parasites in the preparation of permanently stained smears of stool specimens. mercuric chloride is potentially hazardous to laboratory personnel and presents disposal problems.

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Schaudinn's fixative

Schaudinn solution, widely used to fix protozoa and helminths in human fecal specimens, contains mercuric chloride (HgCl_2) which is a potential hazard to patients and laboratory workers. If the solution is disposed of through drains, the HgCl_2 will contribute to environmental hazards. It would be desirable to replace the HgCl_2 in the fixative with a less toxic compound.



2. *G. lamblia* cysts. $\times 1,000$.