

EVALUATION AND COMPARATIVE ANALYSIS OF NEWER COMPOUND FIXATIVES

ABSTRACT:

BACKGROUND:

Fixation is the crucial step in the practice of diagnostic pathology. Formalin has been used as a general fixative for more than one century. The IARC (International Agency for Research on Cancer) reported that there is a causal association between formalin exposure and leukemia and nasopharyngeal carcinoma. Hence it is necessary to find an alternative fixative to replace formalin in pathology laboratory.

METHODS:

100 specimens were fixed in 3 different minimal formalin containing compound fixatives at 10, 8 and 7 hours. Compound fixatives were prepared with varying concentrations of formalin, ethanol, glycerin and hypotonic saline. The processed specimens were analysed for fixation artifacts, staining characteristics and cytoarchitectural features and compared with conventional formalin fixation.

RESULTS:

Cytoarchitectural features (nucleus, cytoplasm and architecture) were preserved as well as conventional formalin fixation in both fixative 1 and 2 at 10 & 8 hours. 7 hours fixation resulted in inadequate fixation. Fixative 3 resulted in poor preservation of tissues in all

three fixation times. Fixative 2 found to evaporate less formaldehyde vapor than 10% buffered formalin and fixation time reduced upto 8 hours.

CONCLUSION:

As formaldehyde is a group 1 human carcinogen, it should be replaced by less toxic fixatives in histopathology laboratories. The present study highlights that minimal formalin containing compound fixatives can be easily prepared in the laboratory and their effectiveness in routine histopathology examination is comparable with conventional formalin fixation.

Key words: formalin toxicity, compound fixatives, shrinkage artefacts.