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## TECHNICAL DATA SHEET 974

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# Karnovsky's Fixative

## INTRODUCTION

Fixatives containing both formaldehyde and glutaraldehyde tend to give better tissue fixation than either of these aldehydes used separately. Formaldehyde penetrates tissue more rapidly than glutaraldehyde, but its fixation is less permanent. The use of this combination provides rapid stabilization of cell ultrastructure by formaldehyde, followed by a more permanent fixation by the subsequent treatment with the slower penetrating glutaraldehyde. This kit gives the same formulation in an easy to use one step method.

## CONTENTS

- 1 x 10 ml 50% Glutaraldehyde
- 2 x 10 ml 16% Formaldehyde
- 1 x 50 ml 0.2M Phosphate Buffer

## PROCEDURE

This kit is simple and easy to use. Simply add the contents of the formaldehyde ampoules and the glutaraldehyde ampoule to the phosphate buffer and dilute with distilled water to 100ml in order to give a working solution. **NOTE:** Researchers often prefer different concentrations of the aldehydes; 0.5-2.0% formaldehyde and 1.0-3.0% glutaraldehyde and one is encouraged to experiment with the concentrations and combinations that best suit the individual tissue sample. Karnovsky suggested a fixative containing 2% paraformaldehyde (formaldehyde) and a 2.5% glutaraldehyde in 0.1 M phosphate or cacodylate buffer, with a final pH of 7.2. If necessary, osmolarity may be adjusted with sucrose, glucose or NaCl. Also, CaCl<sub>2</sub> may be added to give a final concentration of 1-3mM, but this will cause a precipitate with phosphate buffer.

Tissue blocks approximately 1mm<sup>3</sup> should be immersed in this fixative for 30 min. to 2 hours. Wash with appropriate buffer and then postfix with 1% OsO<sub>4</sub> buffered with cacodylate or s-collidine for 2 hours at room temperature or 4°C. Follow with standard routines for dehydrating and embedding.

## REFERENCES

1. Karnovsky, M.J., *A Formaldehyde-Gutaraldehyde Fixative of High Osmolarity for use Electron Microscopy*. 1. *Cell Biol.* 27,137 A, 1965.
2. Hayat, M.A., *Principles and Techniques of Electron Microscopy, Biological Applications, Third Edition, CRC Press, 1989.*

## ORDERING INFORMATION

Cat. #	Description	Size
22872	Karnovsky's Fixative	5 kits

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