

Dedication

To my family

.....

To my teachers

.....

To my colleagues

.....

To all

Acknowledgement

First of all I thank Allah for giving me the strength and support to do this work.

I wish to express my indebtedness to my supervisor Dr. Hussein GadelKarim for his patient supervision, inspiring guidance and unfailing interest he displayed throughout this study.

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Abstract

This is a comparative descriptive study to compare between 10% Buffered Formalin and Carnoy's fixative measuring their effects on the qualities of subsequent procedures such as tissues sectioning and staining. The study conducted in Khartoum during the period from 10th November 2008 to 21st April 2009.

Fifty histological specimens collected from a rabbit after anesthesia by chloroform. Tissues obtained from different organs including spleen, liver, kidneys, skin, small intestine, muscles, large intestine and cartilages. All histological specimens were fixed in wide suitable containers ten times the volume of specimen 25 of them by 10% Buffered Formalin and the other by Carnoy's fluid. Then specimens were processed, sectioned and stained by Haemtoxylin and Eosin (H and E), Periodic acid schiff's (PAS), Alcian blue and Perl's Prussian blue, then examined microscopically. Data entered a computer, checked, verified and analyzed using SPSS program. Means were used for comparison of results.

The study showed that 10% buffered formalin is the superior in section cutting, staining by H and E, staining by Alcian blue and staining by Perl's Prussian blue as (4.76), (5.28), (4.76) and (5.64) respectively, while carnoy's represent(3.84), (4.00), (2.88) and (3.92) respectively. In staining by periodic acid Schiff's (PAS) carnoy's is better (4.52) followed by 10% buffered formalin (3.76).

The study showed that, though Carnoy's fixative can rapidly penetrates the tissues, but it cannot be a substitute for Buffered Formalin. Though, Formalin

has credited the best results, but it might not be suitable with tissues requiring faster penetration rates such as glycogen and other important carbohydrates.

Similar studies are recommended for further optimization of more save histological fixatives, Ten percent Buffered Formalin should be used as a reference for histological appearance.

الخلاصة

أُجريت هذه الدراسة في الخرطوم خلال الفترة من 10 نوفمبر 2008 وحتى 21 أبريل 2009م، وهي عبارة عن دراسة مقارنة وصفية بين 10% الفورمالين المحتوي على المدرؤ وسائل كارنوي كمثبتات تستخدم بصورة روتينية في معمل الأنسجة. هدفت هذه الدراسة إلى إيجاد طريقة مثلى وبديلة للفورمالين.

خمسون عينة أنسجة مختلفة أُخذت من أرنب، حيث ثبت نصفها بواسطة سائل كارنوي في حاويات واسعات تحتوي على عشرة أضعاف حجم العينة من المثبت، كما تمت معالجة باقي العينات بمثبت 10% الفورمالين المدرؤ في حاويات واسعات تحتوي عشرة أضعاف حجم العينة من المثبت. بعد ذلك عُولجت الأنسجة جميعها وقطعت ثم صبغت الأنسجة بواسطة صبغة الهيماتوكسولين والايوسين، صبغة السيان بلو، صبغة بريوديك أسيد شيف و صبغة بيرلس بروشيان بلو، ثم اختبرت مجهرياً.

أدخلت النتائج في الكمبيوتر و حللت إحصائياً باستخدام برنامج SPSS. أوضحت النتائج أن الفورمالين هو الأفضل من حيث جودة القطع و الصبغ بواسطة صبغة الهيماتوكسولين والايوسين، صبغة السيان بلو و صبغة بيرلس بروشيان بلو حيث كانت النتائج كالآتي (4.76) ، (5.28) ، (4.76) ، (5.64) بينما سائل كارنوي (3.84) ، (4.00) ، (2.88) و (3.92). أما جودة الصبغ بواسطة صبغة بريوديك أسيد شيف أوضحت أن سائل كارنوي (4.52) أفضل من الفورمالين (3.76).

خلصت الدراسة إلى أن سائل كارنوي يمتاز بسرعة النفاذية إلا أنه لا يصلح كبديل للفورمالين. توصي الدراسة باستخدام الفورمالين في الروتين و إجراء مزيد من البحوث واعتبار الفورمالين مرجعاً للمظهر النسيجي.

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