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"EFFICACY OF COCONUT OIL AND OLIVE OIL OVER XYLENE AS CLEARING AGENT - A COMPARATIVE MORPHOMETRIC STUDY."

by

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ABSTRACT

Background: Clearing agents are among the most noxious and hazardous chemicals found in the histology laboratories. Therefore in an effort to improve working conditions in the histopathology laboratory, we have investigated whether non-toxic substances may be substituted for the toxic organic solvent xylene currently in use.

Material and Methods: Three tissue bits of 60 soft tissue specimens were processed simultaneously in xylene, coconut oil and olive oil as clearing agents. Features such as translucency, rigidity, degree of shrinkage, procedures like impregnation & microtomy were compared to that of xylene with coconut oil and olive oil processed tissue blocks. All sections were stained with hematoxylin and eosin to permit evaluation of histological details by two independent observers. Furthermore, a group of histochemical and immunohistochemical staining were applied to a subgroup of tissue sections. These sections were then microscopically evaluated for various parameters and also subjected to morphometric analysis. The results were subjected to statistical analysis using Kruskal Wallis ANOVA, Mann-Whitney U test & Wilcoxon matched pair test.

Results: The results showed no significant differences between the three different clearing agents in terms of gross tissue changes except for rigidity after clearing. Statistical significant gross tissue shrinkage evident in xylene ($p=0.000$) was not seen in vegetable oil processed tissue. The cellular details were well preserved and the staining intensity was uniform. In the histochemical and immunohistochemical staining, no differences were registered. Morphometrically there was significant

difference in mean area of epithelial (parabasal) cells and mucous acini in xylene processed tissues compared to that of vegetable oils.

Conclusion: As it appears that tissue stability does not vary with preparation procedure, we conclude that vegetable oils may be substituted for xylene without loss of details. However it may be necessary to investigate a broader range of tissues before vegetable oil methods can be generally recommended.

Keywords: Clearing agents; Xylene; Coconut oil; Olive oil