

**BACKGROUND:**

The histopathological laboratory technicians are routinely exposed to xylene during procedures like tissue processing, clearing, staining, placing a cover slip and cleaning tissue processors. On account of the Occupational Safety and Health Administration (OSHA) regulations, various xylene substitutes such as limonene reagents, aliphatic hydrocarbons, vegetable oils and mineral oils were tried in the past to avoid xylene in the laboratory. This study is designed to establish whether the use of coconut oil and palm oil at a maintained temperature as a clearing agent during tissue processing and as a dewaxing agent during staining has any effect on transparency, rigidity, change after impregnation, ease in sectioning and quality of staining such as nuclear staining, cytoplasmic staining and clarity of staining as compared with the xylene treated counterparts.

**AIMS AND OBJECTIVE:**

- 1) To evaluate the efficiency of coconut oil and palm oil as a clearing agent for Hematoxylin and Eosin staining procedure and compare it with xylene.
- 2) To determine whether tissues cleared and dewaxed with coconut oil and palm oil are same or superior with the xylene treated tissues.

**MATERIALS AND METHODS:**

A total of 30 tissue specimens were collected, fixed in 10% formalin and sectioned into 3 equal parts and grouped as group A, B, and C. Group A tissue specimen were taken for routine processing followed by hematoxylin and eosin staining procedure with xylene as clearing agent, whereas group B tissue specimens were treated with heated palm oil at a temperature maintained at 60°C

instead of xylene as a clearing agent. Similarly group C tissue specimens were treated with heated coconut oil at a temperature maintained at 60°C instead of xylene as a clearing agent during processing. Gross tissue specimen evaluation like rigidity, translucency, change after impregnation and ease of sectioning were evaluated and was compared between the groups having group A as the control. All the specimens were processed, sectioned and stained using hematoxylin and eosin stain and were coded and observed for evaluation of nuclear staining, cytoplasmic staining and overall clarity of stained slide and the results were compiled and subjected to statistical analysis.

**RESULTS:**

Coconut oil treated specimen showed better characteristic features than palm oil treated specimen with respect to rigidity, translucency and change after impregnation which was 43.33%, 63.33% and 90% respectively. Both palm oil and coconut oil treated specimen showed similar features when compared with that of ease of sectioning. Among 90 hematoxylin and eosin stained slides, coconut oil treated sections showed better nuclear staining, cytoplasmic staining and clarity of staining which was 83.33% ,93.33% and 93.33%.

**CONCLUSION:**

Coconut oil treated specimen showed better characteristic features than palm oil treated specimen with respect to rigidity, translucency and change after impregnation. Coconut oil treated sections showed better nuclear staining, cytoplasmic staining and clarity of staining.

**KEYWORDS:**

Xylene, Coconut oil, Palm oil, Hematoxylin and eosin staining.