

Teak (*Tectona grandis* Linn) derived dye: an eco-friendly alternative for Eosin in histological staining

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Introduction: Staining plays a pivotal role in the morphological evolution of tissue samples in histopathology. The combination of Hematoxylin and Eosin is the most common stain utilized for tissue staining. Hematoxylin, a nuclear stain, is a natural dye, whereas eosin is a synthetic dye. The use of synthetic dyes raises concerns about their harmful effects on both laboratory workers and the environment. Consequently, finding an alternative eco-friendly natural dye to replace eosin is inevitable to improve the laboratory diagnosis in histopathology.

Objective: To evaluate the staining efficacy of a dye isolated from *Tectona grandis* Linn. on tissue samples.

Methodology: Young leaves of *T. grandis* Linn. were collected and washed with tap water. The cleaned leaves were subjected to drying in an oven at 40°C and ground into fine powder. The extract was obtained by combining the dry plant material with 96% ethanol at 60°C for 4 hours and allowed at 25°C for 12 hours. The mixture was filtered through Whatman paper followed by centrifugation at 5000 rpm for 15 minutes. The collected supernatant was removed using a Rotary evaporator and redissolved in absolute methanol to a final concentration of 20mg/ml. The staining ability of the dye was evaluated on 5 µm thick sections of human appendix tissues.

Results: The findings demonstrated that the dye isolated from young leaves of Teak exhibits a staining potential on appendix tissues. Particularly, the staining ability of *T. grandis* Linn derived dye at a concentration of 20 mg/ml on tissue samples was comparable to those stained by Eosin.

Conclusion: A dye extracted from *T. grandis* Linn. exhibits notable staining potential on histological tissues which could be utilized as an alternative eco-friendly natural stain for histological staining.

Keywords: Staining, *Tectona grandis* Linn, Histological tissues, Dye, Eosin