

Colour Properties of Tamarindus Indica Seed Dyed Silk Fabric Using Metal and Bio-Mordant

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Structured Abstract

Background: The incredibly long-lasting qualities and cost-effectiveness of synthetic dyes revolutionized their production in the nineteenth century. However, a recent study shows the drawbacks of synthetic dyes, motivating people everywhere to use less of them and pay more attention to natural source colours, which have several advantages over synthetic dyes. Different colour shades could come from bacteria, minerals, plants, animals, or plants. This study utilized Tamarindus Indica seed which is considered food waste as a natural colourant on silk fabric with the help of metallic and bio-mordants. The purpose of this study is to investigate the dyeability of the Tamarindus Indica seed on the dyed silk fabrics using different types of mordants

Methods: The colourant from Tamarindus Indica seeds was extracted using Boiling Water Extraction (BWE) method. Exhaustion (EX) dyeing was performed on 100% plain silk fabrics at 80°C for 60 minutes. In this study, simultaneous mordanting technique was employed, in which each mordant was put into metal tubes together with the dye solution (Tamarindus Indica seeds extract). Two (2) types of mordants; metallic (aluminium chloride and iron (II) sulphate) and bio-mordants (lemon juice and tea) were used in this study to enhance the shades of dyed silk fabrics.

Results: This study shows that natural colorant was successfully extracted from Tamarindus Indica Seeds, which produces brownish shades of dyed silk using both metallic and bio-mordants. The results indicates that dyed silk with iron (II) sulphate produces more darker shades compared to other mordanted samples. In relation to the colour fastness, all mordanted dyed silks, including unmordanted samples turn into darker shades from the original shades after washing. All samples show excellent results for colour fastness to perspiration and change in colour after 24 hours exposed to light. However, dyed silk with iron (II) sulphate was affected with the rubbing process.

Conclusion: In conclusion, the findings of this study indicated that there is considerable potential in extracting natural dyes from diverse plant sources, thereby offering long term environmental advantages. The utilization of leftover plant material; Tamarindus Indica seed in this study for natural dye extraction could potentially be used for dyeing textiles, to substitute synthetic dyes.

Keywords: Natural Dyes, Tamarindus Indica Seeds, Mordants, Exhaustion Dyeing, Colour Properties

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