

Dyeability of Silk Fabric with the Avocado Pits Extract using Different Mordanting Techniques

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Structured Abstract

Background: Synthetic dyes consumed a large amount of water that produces effluent which causes serious environmental pollution. It also causes health risks and negative impacts on nature's eco-balance. In relation to the disadvantages of synthetic dyes, the popularity of natural dyes has gained wide acceptance due to increased awareness of sustainable textiles. Different shades of natural colourants can be extracted using sources such as roots, stems, leaves, flowers, fruits, and other plant materials with the use of various mordants. This study utilized avocado pits, that is considered food waste as a source of natural colourant on silk fabric. The purpose of this study was to investigate the dyeability of avocado pits on dyed silk by using a lemon as a biomordant.

Methods: The extraction of avocado pits was done by using the boiling water extraction method. Exhaustion (EX) dyeing was performed using avocado pits natural colorant on 100% plain silk fabrics at 80°C for 60 minutes using pre-mordanting and simultaneous mordanting techniques. As a result, the colour shade, reflectance, colour strength (K/S value), absorbance of dye and the percent of exhaustion of the dyed fabrics were analyzed. The analysis also included the colourfastness testing to wash, rubbing, light and perspiration.

Results: This study shown that the colour shades obtained using different mordanting technique were distinct when applied on silk fabric. Colour shade of the dyed silk with pre-mordanting technique shows darker in colour compared to dyed silk with meta-mordanting techniques. All fabric samples also show excellent colourfastness to washing, perspiration, rubbing and light using both mordanting techniques.

Conclusion: In conclusion, this study has provided evidence of new shades obtained from avocado pits, part of fruits that would be discarded by consumers. This study implied there is huge potential for different sources of plants to be extracted as natural dyes which could benefit the environment in the long run.

Keywords: Natural Dyes, Avocado Pits, Mordanting Techniques, Exhaustion Dyeing, Silk

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