

**DYES FROM *MORINDA LUCIDA*: THE EFFECTS OF
MORDANTING METHODS AND DYEING TIME ON
TEXTILE COLORATION**

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APPROVAL

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DECLARATION

I Sabano Doreen do hereby declare that the information in this report is my own work and contents therein are due to the research and work carried during the development of my project "Effects of mordanting methods and dyeing time of Morinda Lucida on textile coloration". Therefore if a report of the same kind is found anywhere in any of the academic institutions, I will be responsible.

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Date: 22nd MAY 2014



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In such a vast understanding of this nature, it is impossible to acknowledge the contribution of all. However, the temptation to acknowledge the following is irresistible. The first is God whose guidance, love and grace made the writing as well as the publication a successful venture.

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ABSTRACT

The study investigated the effects of different mordanting methods and dyeing time on silk and cotton fabric colorations from the bark of *Morinda lucida*. The effects are analyzed with respect to color fastness to light, washing, wet and dry rubbing and color characteristics on CIELab color coordinates. The aqueous extraction method was used to extract the dye. Alum and ferrous sulphate mordants were used for dyeing. The mordanting methods used include: pre-mordanting, simultaneous mordanting and post-mordanting. In the control dyeing without the use of mordants, moderate to good fastness were registered with the following fastness ratings; for washing (2-3), dry rubbing (4), wet rubbing (3-4) and light (4) for silk fabrics and for washing (2), dry rubbing (3), wet rubbing (3) and light (4) for cotton fabrics. The natural dye is therefore an adjective dye since it is poor without mordants. The use of mordants improved color fastness to light from ratings of (5) to (6) for most mordants with simultaneous method and premordanting methods exhibiting the best results on silk and cotton fabrics respectively. Multiple colors were produced with different mordants therefore the plant leaves possess polygenetic dye. Premordanting method registered the best color strength in terms of color difference value and it exhibited the best color saturation value C. In all cases premordanting method gave the best color characteristics with the most brilliant colors on fabrics and good color fastness with all mordants. However, there was no observable effect of mordanting methods on the yellowness or greenness of color.

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1.0 INTRODUCTION

1.1 Background of the study

Natural dyes are dyes of colorants derived from plants, invertebrates, or minerals. The majority are vegetable dyes from plant sources – roots, berries, bark, leaves, wood and other organic sources such as fungi and lichens. Textile fibre may be dyed before spinning, yarn dyed or piece dyed after weaving. Discovery of synthetic dyes in the mid-19th century triggered the end of the large scale market for natural dyes. Synthetic dyes which could be produced in large quantities quickly superseded natural dyes for the commercial textile production enabled by the industrial revolution and unlike natural dyes; they were suitable for synthetic fibres that followed. Artists and crafts movements preferred pure shades and subtle variability of natural dyes which mellow with age but preserve their true colors and helped ensure that the old European techniques for dyeing and printing with the natural dyestuffs were preserved for use by home and craft dyers. (Tarek Kakhia, 2009)

In the early 21st century, the market for natural dyes in the fashion industry is experiencing resurgence. Western consumers have become more concerned about the health and environmental impact of synthetic dyes in manufacturing and there is a growing demand for products that use natural dyes. The European Union, for example, has encouraged Indonesian batik cloth producers to switch to natural dyes to improve their export market in Europe. (Williamsburg VA, 2001)

An overwhelming international interest has arisen in natural dyes due to increased awareness of the environmental and health hazards associated with the synthesis, processing and use of synthetic dyes. Today, natural dyes derived from plants have recently gained economic advantage over synthetic dyes because of their non-toxic, non-carcinogenic and biodegradable nature (Bhuyan and Saikia, 2008; Samanta and Agarwal, 2009).

Increasing worldwide awareness of the pollution resulting from the production and use of some synthetic colorants, has led to a significant revival of interest in natural colorants in the last years and is inspiring projects for the sustainable and environmentally friendly development of their production(UNESCO/CCI/SYMP/DOC/7, 2007). In regards to dyeing, synthetic dyes tend to remain quite stable to common oxidation and reduction processes as

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