

Sustainable Chemistry and Pharmacy

Natural dyeing of cotton fabric with extracts from mango tree: A step towards sustainable dyeing

Million Ayele^a, Tamrat Tesfaye^a, Desalegn Alemu^a, Mitike Limeneh^a, Bruce Sithole^{bc}

^a Ethiopian Institute of Textile and Fashion Technology, Bahir Dar University, Ethiopia

^b Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa

^c Biorefinery Industry Development Facility, Natural Resources and the Environment, Council for Scientific and Industrial Research, Durban, South Africa

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Abstract

Recently, there has been a great deal of interest to circumvent the environmental problems associated with manufactured colouring agents by using natural dyes. This study focuses on extracting natural dyes from mango leave and mango peel and finds sustainable ways of cotton dyeing. Natural colouring agents were extracted using an aqueous extraction technique and the cotton fabric was dyed using the extracts followed by mordanting using different mordant types. The dyeing performance of extracted colouring agents were assessed in terms of colour values, dye absorption (%), colour fastness properties and colour strength. The mordanting mechanisms of the extracted dyes were also proposed. Dyes extracted from mango leaves results in more colourised material than dye derived from mango fruit extract. Moreover, the dye extract exhibited a deeper shade. Result also shows that cotton fabric dyed with the same dye extract but with different type of mordants resulted in a fabric that showed diverse colours. Moderate to good fastness values were recorded (4–5). Considering the dyes exhibited excellent colour fastness, it can be concluded that the natural dyes extracted from various parts of the mango plant could be an effective colouring agent for use on cotton fabrics.