

**EXTRACTION OF NATURAL DYE FROM HENNA
(*Lawsonia intermis L.*) LEAVES FOR STAINING
PALMYRAH (*Borassus flabellifera*) LEAVES**

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ABSTRACT

The use of natural dyes has been growing rapidly due to the result of stringent environmental standards imposed by many countries in response to toxic and allergic reactions associated with synthetic dyes. One dye yielding plant species, *Lawsonia intermis L* is exploited particularly, in skin decorations, hair dyeing and superior for woolen and silk fabrics. Palmyrah leaves which have been dyed mostly with direct dyes till today, which always have problems to dyers. This study was concluded with the extraction of natural dye from this species, application of dye on and antifungal activity of extracted dye. The optimum wave length of dye extracted from henna leaves was 300 nm as the highest absorbance. Using alkaline mediated extraction of henna dye with different concentration of NaOH was carried out and concentration of 0.3 M NaOH showed significantly ($p < 0.05$) higher dye absorbance at 100 °C, 60 min and 1:20 as optimum temperature, time and leaf: NaOH volume ratio for the extraction of henna dye. Application of dye on palmyrah leaves was studied with different concentrations of dye 1:2 (Dye:Water) was selected ($p < 0.05$) highest dye absorbance. The optimum temperature and time was 70 °C and 45 min respectively for the significantly ($p < 0.05$) higher dye absorbance and light fastness. Palmyrah leaf article decay fungi such as *Aspergillus niger*, *Aspergillus flavus* and *Penicillium sp.* were used for the study of antifungal activity of exacted dye from henna leaves. Henna dye showed better antifungal activity and most effective against to *A. niger*, and *Penicillium sp.*, compared with *A. flavus*, and gave 67, 60 and 36 percentages of growth inhibitions at 15 g/L minimum inhibitory concentration, henna could be used for the development of new environmental friendly antifungal agent for the preservation of palmyrah leafy handicrafts.

Key words: Palmyrah leaf, Henna dye, Absorbance, Antifungal activity and fastness