ABSTRACT

Natural Dyes from *Bidens macroptera* (Adey Ababa) Flower and *Eucalyptus camaldulensis* Leaves and their Application for Leather dyeing.

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Natural dyes have gained importance due to the growing environmental awareness and implementation of stringent regulations in production and use of synthetic dyes. This scenario necessitated the present investigation on bio-dyes Therefore, to address some of these issues a study was conducted to produce natural dye and evaluate the efficiency of dyeing on sheep crust. Flower of *B. macroptera* and leaves of *E.camaldulensis* were extracted with *n*-hexane, *n*-hexane: chloroform 1:1, methanol: chloroform 1:1 and methanol. The dye produced from *B. macroptera* and *E.camaldulensis* were analyzed by TLC, FTIR, Column Chromatography,UV-Visible spectrophotometer and GC-MS. The color coordinates, (L*a*b* Chroma, and ΔE) , as well as wash, light, rub and perspiration fastness values were determined. The results of the study revealed that methanol extract showed good yields of 34.3% and 32.9% for *B. macroptera* and *E. camaldulensis*, respectively. The Rf values for both plant extracts were 54.4 and 52.2 for novocol dye. The FTIR result showed primary amine C-N stretching group in plant extract as well as in synthetic dye. Spectrophotometrically, the extracted dye and novocol dye showed yellow color with absorption spectrum of 436nm, 449nm, 450nm for novocol ,*E.camaldulensis* and *B.macropetra*,respectively. Color bearing compounds such as ellagicacid, quercetin and gallic acid (Benzoicacid,3.4.5-trihdroxy) obtained from *E. camaldulensis* and lutein from *B. Macropetra* while6-Amino.1,4-diazoanthraquinone obtained from novcocl dye. The dyed leather from plant extract were showed better coloring propertieswith the following fastness ratings(R); for dry rubbing (5R), wet rubbing (4/5R), perspiration on test pieces (4R),washing (4R), and light (5R) for *B. macroptera*and (5R), for dry and wet rubbing,(4/5R) perspirationon test pieces ,(4/5R) for washing and (4/5R)lightness property for *E.camaldulensis.* The results showed that natural dye from *Eucalyptus* leaf and *B. macroptera* flowers extract have potential applications for leather dyeing.

Keywords: Natural dyes, *Eucalyptus camaldulensis and Bidens macroptera* (Adey Ababa)