

**Development of Natural Hair Color Product Using Dyes in *Phyllanthus Emblica* L.
(Beheth Nelli)**

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Natural dyes derived from plant materials are increasingly recognized as safe and non-toxic, contributing to their established reputation in holistic hair care practices. This study focuses on developing a natural hair color product using dyes extracted from *Phyllanthus emblica* (Beheth Nelli) and the identification of the potential fiber damage caused by commercially available hair colors. The methodology involved the extraction of dyes from the *P.emblica* dried leaves, fermented leaves and bark of the plant using a Soxhlet apparatus with methanol. The methanol was evaporated from the sample using a rotary evaporator. The extracted dyes were mixed with water and applied to bleached hair. The hair was left for an hour, washed with water, dried, and observed for physical color changes. The 24-hour fermented leaves extracted dye showed more color difference compared to the bleached hair. Further, the oven-treated hair showed more color. Natural additives such as lemon (*Citrus limon*), aloe vera (*Aloe vera* (L.) Burm.f), tea (*Camellia sinensis*), and coffee (*Coffea arabica*) decoction were used to enhance the hair dye mixture. The hair color improved when the coffee decoction was mixed with the dye. The results of this research suggest that the natural dyes extracted from *P. emblica* bark and leaves could serve as a sustainable alternative to commercially available hair color products. However, further research is necessary to evaluate the long-term effects of these natural dyes on hair health and to optimize the dyeing process.

Keywords: *Phyllanthus emblica* L.; Natural hair color; Methanol extract; Fermented leaves; Coffee decoction

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