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''CLEANER PRODUCTION INITIATIVES AND CHALLENGES FOR A SUSTAINABLE WORLD''

Waste Effluent as Natural Dyestuff

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Abstract

Currently, natural dyes are gaining wider interest in society, creating a new market niche that values products obtained from natural raw material, due to less damage to human health and the environment. A potential source for obtaining these dyes lies in the industrial production of essential oil from eucalyptus leaves. This uses the liquid waste generated in the distillation stage of the eucalyptus leaves, using water steam; a large volume of which is generated and disposed of as effluent. Brazil is one of the main global producers of oil from eucalyptus leaves, especially *Corymbia citriodora* (*Eucalyptus citriodora*), and so there is enormous potential for exploitation of this effluent as raw material. The potential of this residue as a natural dye was evaluated, specifically for cotton fabrics. The effluent residue was concentrated and the physical-chemical characteristics of the obtained natural dyestuff was evaluated; presenting an acid pH and total solid content of 3.3% and 48.1% and condensed tannin content of 10.9% respectively. As for color of the extracts, it showed a brown color with CIE LAB values of L=0,19; a=0,50 and b=0,17. The naturally dyed fabric was evaluated for color solidity after washing: staining of the multi-fiber fabric was greater than 4 and the notes of color change were 3-4. The solidity of the washing results showed that the natural dyestuff reached the acceptable notes for the textile industry and the natural dye obtained from the waste effluent leaves of C. *citriodora* has a potential of use as natural dyestuff in the dyeing of cotton. In future studies, the evaluation of color solidity using natural dye in dyed fabrics is intended.

Keywords: *distillation, residue, Corymbia citriodora, dyed fabric.*