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# *INFLUENCE OF PHENOLICS' IN THE GREEN SYNTHESIS OF SILVER NANOREMEDIADORS USING LEUCENA LEAVES' AQUEOUS EXTRACT*

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Phenolic compounds (PCs) are useful to generate metallic nanoparticles (NPs), reducing metal ions, capping and enhancing the yield. These NPs can present useful properties such as remediating the pollution caused by organic synthetic dyes. These environmental contaminants are commonly toxic to living beings. Methylene blue (MB), for example, largely applied in textile industry, can cause cyanosis and tissue necrosis in humans. The aim of the present study was to investigate if the variation in the concentration of PCs can influence the efficiency of promoting remediation of MB's pollution by silver NPs synthesized using an extract containing these natural products. As the vegetal source of PCs the leaves of the invasive species *Leucaena leucocephala* (Leucena) (PAMG herbarium nº 58919) were used. They were collected (20°8′7″ S and 44°53′49″ W), cleaned, dried and submitted to extraction (10g/100 mL of deionized water, 30 min., 80 °C). The extract had its PCs' dosage assessed through Folin- Ciocalteu method and was then added to a 1 mM aqueous solution of $AgNO_3$ at different proportions *v/v:* 1:1, 3:1, 6:1, 9:1. The mixtures were kept under agitation for 1 hour. The reaction products were washed, dried and had their nanoremeadition capacity tested against MB (10mg/L). This assay was performed in 96-well plates, in triplicate, to test 5 different concentrations of NPs. The triplicates pipetted were (1) water; (2) MB; (3) NPs 1000 ppm in water; (4) NPs 1000 ppm and MB; (5) NPs 500 ppm in water; (6) NPs 500 ppm and MB; (7) NPs 250 ppm in water; (8) NPs 250 ppm and MB; (9) NPs 125 ppm in water; (10) NPs 125 ppm and MB; (11) NPs 62.5 ppm in water; and (12) NPs 62.5 ppm and MB. The absorbance was measured each 30 min for 2.5 h at 665 nm, and the results were analyzed (two-way ANOVA/Tukey's post-test). The PCs dosage of the crude extract was 383.95 ± 0.17mg/g of vegetal material. The maximum percentages of remediation (NPs 1000 ppm) were: 55.5% (1:1), 64.61% (3:1), 77.79% (6:1) and 100% (9:1). Therefore, the PCs' dosage influences in the efficiency of MB's remediation by NPs, enhance their performance.

***Keywords:*** *Leucena leucocephala, phenolics, Folin–Ciocalteu method, green synthesis, silver nanoparticles, nanoremediation*