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## Green synthesis of silver nanoparticles using *Moringa oleifera* fruit extract and its application to the photocatalytic degradation of methylene blue

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Green synthesis of stabilized silver nanoparticles (AgNPs) using aqueous extract of *Moringa oleifera* fruit is presented in this study. The reduction of Ag<sup>+</sup> to Ag<sup>0</sup> was confirmed by the formation of reddish-brown solution and the appearance of surface plasmon resonance band at around 400nm. The optimum conditions of the synthesized AgNPs were at 30% extract concentration, pH10 and contact time of 7 days. Further, the stable AgNPs were characterized using UV-Vis spectroscopy, Fourier-Transform Infra-Red (FTIR) spectroscopy and Transmission Electron microscopy (TEM) analysis. TEM images revealed that the average diameter of the synthesized AgNPs was 31.3±13.7nm. Photocatalytic degradation of methylene blue was measured spectrophotometrically by using silver as nanocatalyst under visible light, UV light and solar irradiation. Results showed that the biosynthesized AgNPs were found to be notable in degrading methylene blue under solar irradiation of nearly 40% decolorization at 6 hour of exposure time.

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