

## Green Synthesis of Iron Nanoparticles from Long Coriander (*Eryngium foetidum*) Leaves Aqueous Extract

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Green synthesis method is becoming more popular as an economical, energy-efficient, low cost and environment-friendly way of synthesis of iron nanoparticles (FeNPs). In this study, the aqueous extract of long coriander (*Eryngium foetidum*) leaves was used as reducing and stabilising agents in the synthesis of FeNPs. The aqueous extract of long coriander (*Eryngium foetidum*) leaves can reduce from Fe<sup>3+</sup> into iron nanoparticle (Fe<sup>0</sup>) at room temperature. The green synthesised iron nanoparticles were characterised by Scanning Electron Microscope (SEM) analysis, Energy Dispersive X-Ray (EDX) analysis, X-ray diffraction (XRD) analysis, Fourier transforms infrared (FTIR) spectroscopy analysis and UV-Visible (UV-Vis) spectroscopy analysis. The particles were identified as being on the nanoscale by SEM images and their surface morphology was revealed to be a spherical shape with a particle size range of 30-50 nm. The elemental composition of synthesised iron nanoparticles was detected by EDX spectroscopy analysis, which also revealed that the nanoparticles are primarily present in metal form. The XRD spectrum observed the crystal structure of the synthesised FeNPs, which are crystalline in nature with a size of around 43.30 nm. The FTIR spectrum exhibited different characteristic bands, which indicated the different functional groups of the active components in synthesised FeNPs. The UV-Visible observed the absorption peaks at the 250-295 nm region due to the excitation of surface plasmon vibrations of the FeNPs and the maximum peak was shown at 272 nm. The green synthesis method from synthesised FeNPs can be applied for a wide range of industrial applications.

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