

## BIOSYNTHESIS OF IRON NANOPARTICLE FROM GREEN BANANA PEEL EXTRACT

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### ABSTRACT

Banana peel form about 18- 33% of the whole fruit and are considered as a waste product. They are the good sources of polyphenols, carotenoids and other bioactive compounds which possess various beneficial effects on human health (Larrauri *et al.*, 1999; Sotilla *et al.*, 1994; Wolfe *et al.*, 2003). Banana peel is also rich in dietary fibre, proteins, essential amino acids, polyunsaturated fatty acids and potassium (Emaga *et al.*, 2007). At present, these peels were not being used for any other purposes and are mostly dumped as solid waste at large expense. In the present work, cost effective and environment friendly iron nanoparticles were synthesized using green banana peel (*Musa acuminata*) extract as the reducing agent. The synthesized nanoparticles were characterized using UV-Visible spectroscopy, AFM and FTIR. UV-VIS study revealed that iron nanoparticles produced within 2 minutes and absorption reached maximum at 207nm. The reduction of Fe<sup>3+</sup> to Fe ions were confirmed by FTIR spectra. The spectrum of Fe NPs showed peaks at 3390.0, 2852.8, 1608.7, 1508.1 and 1376.7cm<sup>-1</sup> and they were the characteristics of N-H amine, C-H alkanes and C=C alkenes that causes the reduction of ions. Results of AFM showed the spherical shaped structures of different sizes of Fe NPs. The particle size varies from 100-200nm.

**KEY WORDS:** *AFM, Banana peel, FTIR, Iron nanoparticle and UV-VIS.*

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