

Green Synthesis and Characterization of Silver Nanoparticles using *Glycine Max* L. Seed Extract and their Antiepileptic Activity in Rats

MD Imad Uddin*, D.Kalyani, N. Tejasri, A. Mounika, A. Sowndarya, J. Anitha and MD Ashwaq Hussain

Department of Pharmacology, Pulla Reddy Institute of Pharmacy, Gummadidala, Domadugu, Sanga Reddy-502313, Telangana, India.

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ABSTRACT

Glycine max is an edible oil seed and commonly known as Soybean. In this study, we report green, inexpensive method for synthesis of silver nanoparticles (SNPs) using of Glycine max seeds aqueous extract. Synthesized SNPs were characterized by UV-Visible spectroscopy (UV), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), X-ray diffraction (XRD) and Zeta Potential. Formation of Silver Nanoparticles from *Glycine max* Aqueous Extract (SNGMAE), indicated by appearance of dark brown color. UV depicted peak at 440nm, FTIR showed various functional groups present in plant extract capping in Silver Nanoparticles. Nanoparticle range of SNGMAE was identified by SEM and XRD, while stability was confirmed by Zeta Potential. Different constituents of aqueous extract viz., proteins, phytosterols,

phospholipids, oils and carbohydrates are involved in the formation of SNPs. Synthesized SNGMAE was reconnoitered for antiepileptic activity in pentylenetetrazol (PTZ) and maximal electroshock induced epileptic (MESE) models, phenytoin (25mg/kg) was used as standard anti-epileptic drug. In negative control group of PTZ, all five stages of convulsions were observed, which were significantly reduced with phenytoin and with SNGMAE at 80 and 160mg/kg. MESE was characterized by appearance of flexion, extensor and clonus. In negative control group, these stages appeared for longer duration; these were decreased significantly in the treatment groups. In conclusion, these results show that SNGMAE may be a potent source of nanomedicine for the treatment of epilepsy.

KEYWORDS: *Glycine max*; Silver nanoparticles; Pentylenetetrazole; Maximal electro shock; Wistar rats; Epilepsy.