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Green synthesis of silver nanoparticles, characterization and study its wound healing property

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Silver nanoparticles is one of the paramount model in the gamut of nanotechnology materials due to its insurmountable properties like antimicrobial agents, catalysts etc. which provoked intensive research interest of researchers to use it in various applications. Current research is focused to augment the wound healing and antioxidant activity of aqueous extract of *Tridax procumbens* in combination of broad anti-bacterial activity of silver nanoparticles. Green synthesis of silver nanoparticles has proven to be better alternate over chemical methods which render product with bio compatible attributes whilst giving a cost effective and environmental friendly process. In the present research, silver nanoparticles were prepared using aqueous extract of *Tridax procumbens* having polysaccharides constituents which causes stepwise reduction of silver ions to synthesize silver nanoparticles. Nanoparticles were characterized using ultra violet spectrophotometry (surface plasmon resonance) and dynamic light scattering (DLS) methods. Average nanoparticle size was found between 90-120nm and particle size distribution was found narrow. For ease in use of above mixture of nanoparticles and plant extract for wound healing activity, topical gel was prepared using carbopol as polymer. Sprague dolly rat was used as excisional wound model. Rats were divided in four groups, controlled, standard (silver sulfadiazine), plant extract and silver nanogel, having 6 rats in each group. Percentage wound contraction, epithelization time and time taken to remove scar tissue was taken as evaluation parameters and their results were statistically analyzed. It was found that rats treated with silver nanogel shown better and faster wound healing compared to other groups which proves increased wound healing property of *Tridax procumbens* in combination with silver nanoparticles.

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Role of *Globularia* in the inhibition of calcium oxalate crystallization

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Plant extracts are known to modulate calcium oxalate (CaOx) crystallization. One of these is *Globularia*, the root and flower. Medicinals plants have been demonstrated to be an efficient inhibitor of CaOx crystal growth; however, its inhibitory activity against other events in CaOx crystallization has not been fully investigated. To assess the potential of *Globularia* as an effective inhibitor, its effects on CaOx crystal nucleation and aggregation were evaluated. Nucleation and aggregation of CaOx crystals were studied by preparing artificial urine by mixing and stirring two equal volumes of 50 ml of solutions A and B at constant temperature (37°C). In the nucleation assay, crystallization was induced by mixing calcium chloride and sodium oxalate. The addition of extracts of *Globularia* flower and root, acts on the phase of growth crystallisation; the rate of inhibition capacity in concentration 100% is 96.09% and 96.77% for concentration 75% respectively. It was noted that these inhibitors developed an inhibition important on low concentration. *Globularia* is an efficient inhibitor of crystal nucleation and aggregation. Its presence in the kidneys and urine may protect subjects against CaOx crystallization and kidney stone formation.