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ACCEPTED ABSTRACTS

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Novel nano-insulin formulation modulates cytokine secretion and remodeling to accelerate diabetic wound healing

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Little is known about insulin's wound healing capability in normal as well as diabetic conditions. We here report specific interaction of silver nanoparticles (AgNPs) with

insulin by making a ~2nm thick coat around the AgNPs and its potent wound healing efficacy. Characterization of the interaction of human insulin with silver nanoparticles showed confirmed alteration of amide-I in insulin whereas amide-II and III remained unaltered. Further, nanoparticles protein interaction kinetics showed spontaneous interaction at physiological temperature with ΔG , ΔS , Ea and Ka values-7.48, 0.076, 3.84Kcal mole-1 and 6x105 s-1 respectively. Insulin

capped AgNPs (IAgNPs) showed significant improvement in healing activity *in vitro* (HEKa cells) and *in vivo* (Wister Rats) in comparison with the control in both normal and diabetic conditions. The underlying mechanism was attributed to a regulation of the balance between pro (IL-6, TNF α) and anti-inflammatory cytokines (IL-10) at the wound site to promote faster wound remodeling.

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