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Delineating the metal ornamented nanocomposite and role of transcriptional pathway during *in vitro* wound healing

Metal refined nanoceutical in regenerative medicine is gaining popular trend and there is an continuous demand for development of tissue regeneration. Unfortunately, no or very little research being carried out on antioxidant dopped nanometals and its interaction on the signaling axis during the bio-interface action. Herein, cytotoxicity, metal decay, nanoconjugate stability, size expansion, antioxidant assay and signal transduction array of C phycocyanin primed silver nano hybrids (AgcPCNP) were validated towards in vitro wound healing phenomenon. Physiologically relevent ionic solutions did not exhibit the adverse effect on the nanoconjugate stability however, acidic, alkali and ethanol solution completely denatured the AgcPCNP conjugates. Signal transduction RT²-PCR array demonstrated the NFkB and PI3K pathway associated genes significantly ($p<0.5\%$) fluctuated upon AgcPCNP than AgNP group. Specific inhibitor of NFkB (NFI) and PI3K (LY294002) pathways confirmed the involvement of NFkB and PI3K signaling axis. In vitro wound healing assay demonstrated that NFκB pathway plays the prime role in the fibroblast cell migration during process. In conclusion, the present investigation revealed surface functionalization by anti-oxidant bioagent C-phycocyanin suppresses the AgNP mediated stress responses and associated signaling axis in fibroblast cell during the cell migration scenario in vitro wound healing model.

THANK YOU FOR YOUR PARTICIPATION!