Introduction
Wound pH influences residence time and activity of growth factors in healing [1]. Hence, pH responsive sustained release growth factor delivery system capable of modulating release pattern in response to varying wound pH is beneficial for treatment of wound. Thus, potential of poly (N-isopropylacrylamide-co-acrylic acid) hydrogel as pH sensitive sustained release system for wound pH dependant therapeutics delivery was evaluated.

Materials and Methods
Epidrmal growth factor (EGF) and BSA were procured from Peprotech Inc. (Rockey Hill N.J.,USA)and Sigma–Aldrich (St.Louis). For statistical analysis one way ANOVA was done.

Results
Release of (BSA) and murine EGF from the hydrogel (5%w/v) within the range of wound pH (pH 6.7-7.9) follows non-Fickian pH responsive sustained release pattern. FRAP analysis endorsed a pH dependent restricted diffusion of the BSA in the gel. Gel showed invtro biocompatibility EGF loaded hydrogel was then applied on murine excisional wound model and study showed improved wound healing in compare to conventional sustained release growth factor therapy.

Discussion and Conclusions
The pH dependency in therapeutics release from the hydrogel may be due to the ionization of the pendant acid group (-COOH of the acrylic acid) of the polymer chain to carboxylate ion with increase in pH and subsequent electrostatic repulsion mediated swelling of the polymer structure [2]. In conclusion, wound pH responsive sustained growth factor delivery from pH responsive poly(NIPAAm–co-AAc) hydrogel may provide potential regenerative environment during course of healing.

References

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Disclosures
There are no conflicts of interest.