

NITK researchers develop new hydrogel for faster and scarless wound healing

TIMES NEWS NETWORK

Mangaluru: Researchers at NITK, Surathkal, have developed a groundbreaking pH-sensitive hydrogel for treating wounds that take longer to heal. The innovation helps in faster healing of wounds without leaving any scars.

According to patent details available, the hydrogel was tested on rabbits. When used with a normal bandage, wounds took around 20 days to heal. With the new hydrogel, healing was achieved in just 12 days.

The innovation, titled 'A pH-sensitive topical wound healing hydrogel', was granted an Indian Patent and was awarded to researchers Dr P E Jagadeesh Babu, Dr Raj Mohan B, and Dr Diksha Sharma. It is ready for technology transfer.

Normally, chronic and burn-injury (second and third-degree) wounds often resist timely healing due to disrupted healing phases and an alkaline environment that triggers excessive metalloproteinases (MMP) activity. Existing hydrogel dressings fall short in addressing these challenges.

This latest gel, composed of polyaspartic acid, polyvinyl alcohol, and sole fish collagen crosslinked and impregnated with silver nanowires, demon-



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strates a pH-responsive swelling ratio from 731% at pH 3 to 1,405% at pH 10.

The hydrogel's unique characteristic allows it to maintain optimal wound moisture based on pH, thereby effectively fighting bacterial infection, and promoting accelerated, scarless healing.

Researchers worked for nearly three years to develop this and applied for a patent in 2021. After five years of analysis, we have been finally granted the same.

Currently, no wound dressing material effectively combines pH responsiveness, moisture balance, infection

control, and rapid scarless healing.

Interestingly, this research team is also the first to use collagen from sole fish, which is found abundantly in the coastal districts in Karnataka. Usually, sole fish skin is discarded as waste, but this innovative gel makes use of that very waste.

While the human body also produces collagen for wound healing, the sole fish collagen acts as an external factor aiding quick healing. Besides, nano silver material acts as an anti-microbial substance and aids in healing.