



Injectable bandages | Photo source Pixabay

INJECTABLE BANDAGES COULD STOP INTERNAL BLEEDING

 SPORT & FITNESS

New bandages made from seaweed can be injected into a wound to help treat blood loss and save lives.

On the battlefield, a penetrating injury from shrapnel can quickly lead to haemorrhaging, excessive blood loss and death. It is difficult for medics to stop the bleeding from this type of injury, as it can take time to find each shrapnel wound and clamp it off – time that is not always available in a battle situation. Now, a team from the Department of Biomedical Engineering at [Texas A&M University](#) have therefore developed a new way to quickly stop haemorrhaging from shrapnel wounds – using an ingredient commonly found in filled pastries.

A group of researchers, led by Dr. Akhilesh K. Gaharwar, have developed a method using the food thickening agent kappa-carrageenan and nano-silicates to create injectable hydrogels. The gels are injected into the wound, promoting hemostasis (the process which stops bleeding). Additionally, researchers found that when kappa-carrageenan is mixed with clay-based nanoparticles, an injectable gel is created. Plasma proteins and platelets in the blood adhere to the gel surface and trigger a blood clotting cascade. According to Dr. Gaharwar, the injectable bandage solidifies after injection and can also trigger the body to begin the wound healing process. Moreover, Dr. Gaharwar explains, the injectable hydrogels can be introduced into a wound site using minimally invasive approaches.

The research also found that the nanoparticles in the injectable bandages bonded to therapeutic materials using electrostatic interactions. This allowed a slow release of the therapeutic materials that helped to heal the wound. The research was recently published in the journal *Acta Biomaterialia*, and was funded by the [U.S. National Science Foundation](#) and the [National Institute of Health](#). We have recently seen other innovative approaches to the use of nanoparticles in medicine. These have

included a **molecular robot** that can build other robots as well as a **nanosensor** that can sniff out bacteria. What other uses might there be for injectable bandages?

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