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## SHELL SHOCK

CURRENT ISSUE



Report: Stephen Tyler

OF ALL the things likely to save soldiers' lives in Afghanistan, the humble shellfish might seem an unlikely selection.

But any predictions of shrimps being fish out of water in the landlocked country are premature as a medical company has harnessed an amazing secret hidden in the crustaceans' hardened exteriors.

The sea-dwellers' shells contain chitosan, a natural polymer which has been proven to produce a clotting effect, and the substance is being used by MilSys (UK) in a range of products designed to provide emergency treatment for battlefield casualties.



Medical marvel: The clotting properties of a substance found in shrimp shells have been harnessed for use in Celox gauze  
Pictures: Mike Weston and MilSys (UK) Limited

Known as Celox, the substance is able to stem even the most severe arterial bleed by bonding to the surface of red blood cells to produce a clot-like gel.

And the British Armed Forces have now adopted the ingenious solution in a gauze which will be deployed to the front lines of Op Herrick.

"Under a microscope the Celox granules are like tiny corn flakes," MilSys (UK) spokesman Jon Davis told *Soldier*. "If you put them into contact with blood it attracts the red cells and that, combined with directly applied pressure, can control even a femoral artery bleed."

Originally administered to a wound using a syringe-like applicator, the granules in Celox gauze are now impregnated directly into the fabric dressing.

Medics simply place some of the material over a wound and apply direct pressure. The chitosan within the granules forms a sticky plug and this can control major bleeding within a matter of minutes.

The gauze has also been designed to make life easier for doctors further along the medical chain as it can be removed by hand. Natural enzymes found in humans break down any remaining chitosan which is then metabolised by the body.

And it is even safe for use on people with allergies to shellfish as Celox has been found not to cause any adverse reactions.

"There have been previous agents that had certain properties that weren't good," added Mr Davis. "One generated heat which damaged blood vessels, while another was fiddly and expensive.

"These generate no heat, are easy to use and are inexpensive. They can be used in situations where a victim can't get a tourniquet on and can also be applied to multiple wounds."

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