



## Flakes of Crab and Shrimp Shells Provide a New and Effective Way of Clotting Arterial Bleeds

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Celox, a flaked form of the clotting agent chitosan, is revolutionizing how military and medical personnel deal with bleeds, from the smallest scrapes to full-blown arterial fire hoses. Celox is easy to use -- you just pour it on an open wound and apply pressure -- and both safer and faster-acting than similar products. The best bit, though, is that the active ingredient, chitosan, is extracted from the shells of crabs and shrimp.

Chitosan is a polysaccharide -- a complex carbohydrate, like starch -- that is extracted from chitin, the structural component of shrimp and crab exoskeletons. Chitosan is water soluble, bioadhesive, biodegradable, and biocompatible. In its base state, chitosan is an excellent clotting ([hemostatic](#)) agent, but the form used in Celox has been "reacted" to create an enhanced and purified product. Celox, in short, is ideal for augmenting the human body's innate ability to clot wounds.

The real magic of Celox is that it doesn't actually form blood clots, which would be dangerous; rather, the act mixing blood into Celox activates it, turning it into an artificial, gel-like clot. This kind of clot is incredibly effective at staunching blood flow, with 100% of swine test subjects surviving a cut femoral artery. If all that wasn't awesome enough, Celox is incredibly fast-acting -- it can clot blood in 30 seconds, where normal blood takes 800 seconds -- and it even works with blood that has been thinned by warfarin or harparin, or in hypothermic conditions.

If you're interested in more background information, the ways Celox has been tested, and even a picture of what a Celox clot looks like, there's a [research abstract](#) that you can dive in to.

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