

Seal serum offers protection from inflammation

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Weddell seals diving under the ice. Researchers hope to apply their findings regarding the protection provided by seal serum to extend the survival of organs used in transplant surgery. Credit: changehali via Wikimedia Commons

Seal lungs can take a terrible pounding when one of the mammals leaves

the surface. When the lungs collapse during deep descents in order to protect the animal, the delicate tissues incur damage as they are crushed, then suffer blood and oxygen flooding back when the animals return to the surface. In addition, the fragile tissues could suffer inflammation, which is usually triggered to heal any damage.

Yet a team of researchers from various institutions across the United States, including UConn's Milton Levin, an assistant research professor of pathobiology and veterinary science, found no evidence of damage to pulmonary tissues in these deep-diving species.

Their study is published in the July 9 edition of *Journal of Experimental Biology*.

Wondering how elephant seals and Weddell seals protect their lungs from the potentially damaging inflammatory response that should be triggered by the injuries to which the lungs are exposed when they make a deep dive, the team tested whether [blood](#) samples from the two species offered any protection from the effects of inflammation triggered by a bacterial toxin, lipopolysaccharide.

Impressively, the toxin triggered barely any inflammatory response in the seal blood, in contrast to human [blood samples](#), which experience inflammation 50 to 500 times greater. And when the team added [serum](#) extracted from seal blood to mouse immune cells, the serum quenched the [inflammatory response](#).

"These data suggest that seal serum possesses anti-inflammatory properties, which may protect deep divers from naturally occurring inflammatory challenges, such as dive-induced hypoxia-deoxygenation and [lung](#) collapse," say the researchers. They would like to identify the protective compounds, in the hope of being able to use them to extend the survival of organs used in life-saving transplant surgery.

More information: Aranya Bagchi et al. Intrinsic anti-inflammatory properties in the serum of two species of deep-diving seal, *The Journal of Experimental Biology* (2018). [DOI: 10.1242/jeb.178491](https://doi.org/10.1242/jeb.178491)

Kathryn Knight. Collapsing seal lungs protected by amazing anti-inflammatory blood serum, *The Journal of Experimental Biology* (2018). [DOI: 10.1242/jeb.184937](https://doi.org/10.1242/jeb.184937)

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