- Animal experimentation

Tardigrade proteins could slow ageing in humans

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Proteins found in tiny, indestructible tardigrades could potentially be a key ingredient in slowing the ageing process in humans. However, it will take more work to show these proteins are a veritable fountain of youth. For now, researchers have only early hints from lab dish experiments. Also known as water bears, tardigrades are near-microscopic, eight-legged creatures known for their practically superhero-like ability to withstand extreme conditions, including tolerating a severe lack of water, surviving in outer space and emerging unscathed from being red from a gun. To survive such conditions, tardigrades transform into dehydrated balls and dial their metabolisms to near-zero.



In a new study, scientists have discovered that proteins found in these tiny critters can also slow metabolism in human cells in lab dishes. For the study, researchers focused on a tardigrade protein called CAHS D, which transforms into a gel-like consistency when introduced to human cells.”amazingly, when we introduce these proteins into human cells they gel and slow down metabolism, just like in tardigrades,” said Silvia Sanchez-martinez, a senior research scientist in the department of molecular biology at the University of Wyoming.

“Just like tardigrades, when you put human cells that have these proteins into biostasis, they become more resistant to stresses, conferring some of the tardigrades’ abilities to the human cells.” Biostasis is a state of suspended animation in which organisms can tolerate unfavourable environmental changes, such as surviving for long periods without water. The scientists have now demonstrated that the proteins that make biostasis possible in tardigrades can have a similar e□ect on human cells.

Scientists think this nding could be harnessed to make lifesaving treatments available to people in locations where refrigeration is unavailable and improve the storage of cell-based therapies. “Our ndings provide an avenue for pursuing technologies centred on the induction of biostasis in cells, and even whole organisms, to slow ageing and enhance storage and stability,” the researchers wrote. The research may even shed light on slowing down the ageing process.

They also found that the entire process is reversible, meaning the cells’ metabolism can reset back to normal after slowing. “When the stress is relieved, the tardigrade gels dissolve, and human cells return to their normal metabolism,” said Thomas Boothby, an assistant professor at the University of Wyoming. Boothby and his team have been studying tardigrades extensively in their lab. Last year, they found that tardigrade proteins can be used to stabilise a drug used to treat haemophilia, a bleeding disorder.