Scientists Potentially Postpone the Aging Process...In fruit flies

Could we be one step closer to the fountain of youth? In a recent study, scientists at the University of California Los Angeles found that activating a specific gene in key organ systems appears to slow down aging. Upon activation of this gene in fruit fly intestines, the team saw a 30 percent increase in their lifespans. This suggests that delaying aging in the whole body could be achieved remotely by turning on a gene in a single organ system.

Lead author Matthew Ulgherait, a doctoral student who contributed to the research, started out with the goal of investigating the regulation of autophagy, a process in which the cell breaks down old and damaged cell parts before they inflict damage to the cell. Activated by the 5' adenosine monophosphate-activated protein kinase (AMPK) gene, autophagy protects the organism against aging and is known to be an evolutionarily conserved anti-aging mechanism,
which means that the process is very similar in different organisms. Ulgherait was interested to know whether activating AMPK in fruit flies would increase the rate of autophagy, and, subsequently, the level of the organism’s anti-aging protection.

“A really interesting finding was when Matt activated AMPK in the nervous system, he saw evidence of increased levels of autophagy in not only the brain, but also in the intestine,” said David Walker, PhD, the senior author of the research. “And vice versa: Activating AMPK in the intestine produced increased levels of autophagy in the brain – and perhaps elsewhere, too.”

A fruit fly’s lifespan, which is typically six weeks, was extended to eight weeks after AMPK activation. The flies were healthier for longer periods as well, as published this September in Cell Reports.

Previous research has shown correlation between increased lifespan and AMPK activity and autophagy in mice, and building on the discovery of UCLA researchers, it would be interesting to see if intestinal AMPK activation would delay aging of the whole organism in mammals as well.

“Instead of studying the diseases of aging – Parkinson’s, Alzheimer’s, cancer, stroke, cardiovascular disease, diabetes – one by one, we believe it may be possible to intervene in the aging process and delay the onset of many of these diseases,” says Walker. “We are not there yet, and it could, of course, take many years, but that is our goal and we think it is realistic.”

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References

