



Antioxidant Discovery Could Strengthen Ageing Muscles

Description

A team of researchers in Japan is studying how to maintain muscle health as we age. This is crucial because biological processes, including muscle repair, tend to slow down over time.

Researchers at Kyushu University have focused on hepatocyte growth factor (HGF), a protein key to muscle repair. They found that with age, HGF undergoes a chemical change called nitration, which disrupts its function.

Their latest study, published in *Scientific Reports*, tested two antioxidant compounds to protect HGF from this alteration. Antioxidants are molecules that prevent damaging chemical reactions. Professor Ryuichi Tatsumi explained that while HGF isn't missing in older people, it can become chemically changed, so they explored whether strong antioxidants might prevent these changes or counteract their effects.

The compounds tested were glutathione trisulfide (GSSSG) and lipoic acid trisulfide (LASSS), both known for their reactive protective properties. Initial tests indicated that these compounds could reduce nitration at key points on HGF. Particularly, LASSS improved HGF's ability to connect with muscle stem cells, which is essential for repair.

Experiments on mice showed that LASSS effectively reduced nitration, suggesting it could support muscle maintenance during ageing. Before these findings can be applied to humans, further tests are needed.

Future research will include longer-term studies and testing LASSS in older mice. These steps aim to confirm LASSS's potential to combat age-related muscle loss and conditions like sarcopenia, which causes challenges in mobility and increases fall risk in older adults.

The study appeared in *Scientific Reports*.

Vocabulary List:

1. **nitration** //naɪ'treɪʃən// (noun): a chemical change where nitrogen attaches to a molecule
2. **antioxidant** //,ænti'ɒksɪdənt// (noun): a molecule that prevents harmful chemical damage
3. **compound** //'kɒmpaʊnd// (noun): a substance made from two or more chemicals
4. **counteract** //,kaʊntər'ækt// (verb): to stop or reduce a harmful effect
5. **sarcopenia** //,sɑrkə'pi:niə// (noun): loss of muscle strength and mass with age
6. **maintenance** //'meɪntənəns// (noun): care to keep something working or healthy



Comprehension Questions

Multiple Choice

1. What is the focus of the research team in Japan?
Option: Maintaining skin health
Option: Maintaining muscle health
Option: Improving cognitive function
Option: Enhancing cardiovascular health
2. What chemical change does hepatocyte growth factor (HGF) undergo with age?
Option: Oxidation
Option: Nitration
Option: Hydration
Option: Fusion
3. What type of compounds did the researchers test to protect HGF?
Option: Antibiotics
Option: Vitamins
Option: Antioxidant compounds
Option: Steroids
4. Which journal published the latest study on HGF?
Option: Nature
Option: Cell
Option: Scientific Reports
Option: The Lancet
5. What are the names of the two antioxidant compounds tested in the study?
Option: Vitamin C and E
Option: Glutathione trisulfide and Lipoic acid trisulfide
Option: Curcumin and Resveratrol
Option: Alpha-lipoic acid and Omega-3
6. Which antioxidant improved HGF's ability to connect with muscle stem cells?
Option: GSSSG



- Option: LASSS
- Option: Vitamin D
- Option: Glutamine

True-False

- 7. The researchers found that HGF is completely absent in older people.
- 8. Initial tests showed that the antioxidant compounds could not reduce nitration on HGF.
- 9. The study primarily explored ways to enhance muscle health in older adults.
- 10. Further tests are needed before findings can be applied to humans.
- 11. Sarcopenia is associated with increased mobility challenges in older adults.
- 12. LASSS may help combat age-related muscle loss.

Gap-Fill

- 13. Researchers at Kyushu University focused on _____, a protein key to muscle repair.
- 14. HGF undergoes a chemical change called _____, which disrupts its function.
- 15. The compounds tested were glutathione trisulfide (GSSSG) and _____ acid trisulfide (LASSS).
- 16. Before findings can be applied to humans, further _____ are needed.
- 17. The study titled 'HGF and Muscle Health' appeared in _____ Reports.
- 18. Future research aims to confirm LASSS's potential to combat age-related _____ and conditions like sarcopenia.

Answer

- Multiple Choice:** 1. Maintaining muscle health 2. Nitration 3. Antioxidant compounds 4. Scientific Reports 5. Glutathione trisulfide and Lipoic acid trisulfide



6. LASSS

True-False: 7. False 8. False 9. True 10. True 11. False 12. True

Gap-Fill: 13. hepatocyte growth factor (HGF) 14. nitration 15. lipoic 16. tests 17. Scientific 18. muscle loss

CATEGORY

1. Health - LEVEL4

POST TAG

1. Aging Muscles
2. Antioxidant
3. B2
4. esl news
5. ESL reading
6. L4
7. Level 4
8. Vocabulary Builder

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