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# How Liver Inflammation Fuels Cognitive Decline in Aging

## Description

**Summary:** New research looks at how long-lasting liver inflammation can cause brain inflammation and problems with thinking as people grow older. Researchers are studying a type of cell death called necroptosis. When cells die this way, they can cause inflammation. Early results show that stopping necroptosis might lower inflammation in both the liver and the brain. This may help protect thinking skills.

The research could lead to better treatments for liver and brain problems related to aging. Obesity is a key factor that makes inflammation worse. These findings show that we need to understand how the liver and brain work together to help with aging diseases.

## Key Facts:

- Chronic liver inflammation may lead to brain inflammation and cognitive decline.
- Stopping necroptosis can reduce inflammation in the liver and brain.
- Obesity increases inflammation, raising the risk of liver and brain diseases as people age.

**Source:** University of Oklahoma

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## Vocabulary List:

1. **Inflammation** /ɪnˌflæməˈteɪʃən/ (noun): A localized physical condition characterized by redness swelling pain and heat as a response to injury or infection.
2. **Necroptosis** /nɛkˈrɒp.tə.sɪs/ (noun): A form of programmed cell death that leads to inflammation.
3. **Cognitive** /ˈkɒɡ.nɪ.tɪv/ (adjective): Relating to the mental processes of perception memory judgment and reasoning.
4. **Chronic** /ˈkrɒnɪk/ (adjective): Persisting for a long time or constantly recurring.
5. **Obesity** /əʊˈbiːsɪti/ (noun): The condition of being extremely overweight which can lead to serious health issues.
6. **Research** /rɪˈsɜːrtʃ/ (noun): The systematic investigation into and study of materials and sources to establish facts and reach new conclusions.

## Comprehension Questions

### Multiple Choice



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1. What type of cell death are researchers studying in relation to liver and brain inflammation?  
Option: Apoptosis  
Option: Necroptosis  
Option: Pyroptosis  
Option: Autophagy
  2. According to the research, what can stopping necroptosis potentially lower?  
Option: Cholesterol levels  
Option: Inflammation in the liver only  
Option: Inflammation in both the liver and brain  
Option: Blood pressure
  3. What is identified as a key factor that exacerbates inflammation according to the research?  
Option: Diabetes  
Option: Stress levels  
Option: Obesity  
Option: Genetics
  4. How may the research help protect thinking skills?  
Option: By reducing liver inflammation only  
Option: By promoting exercise  
Option: By lowering brain inflammation  
Option: By stopping necroptosis which can reduce inflammation in the liver and brain
  5. What type of diseases could potentially benefit from the findings of this research?  
Option: Lung diseases  
Option: Skin conditions  
Option: Liver and brain problems related to aging  
Option: Vision impairments
  6. According to the text, what needs to be understood in relation to aging diseases?  
Option: The impact of exercise on inflammation  
Option: The role of genetics  
Option: How the liver and brain work together  
Option: The influence of weather

**True-False**



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7. Chronic liver inflammation does not have any impact on brain inflammation or cognitive decline.
  8. Obesity is mentioned as a factor that can increase inflammation.
  9. Stopping necroptosis has no effect on reducing inflammation in the liver and brain.
  10. The research findings are expected to have no relevance to aging-related diseases.
  11. Understanding the relationship between the liver and brain is deemed unnecessary in managing aging diseases.
  12. Necroptosis is a harmless cell death process that does not contribute to inflammation.

### Gap-Fill

13. Chronic liver inflammation may lead to brain inflammation and cognitive decline as people \_\_\_\_\_ older.
14. The research could lead to better treatments for liver and brain problems related to \_\_\_\_\_ diseases.
15. \_\_\_\_\_ increases inflammation, raising the risk of liver and brain diseases as people age.
16. Stopping necroptosis might lower inflammation in both the liver and the \_\_\_\_\_.
17. These findings show that we need to understand how the liver and brain work together to help with aging \_\_\_\_\_.
18. \_\_\_\_\_ is a type of cell death that researchers are studying in this research.

### Answer

**Multiple Choice:** 1. Necroptosis 2. Inflammation in both the liver and brain 3. Obesity 4. By stopping necroptosis which can reduce inflammation in the liver and brain 5. Liver and brain problems related to aging 6. How the liver and brain work together

**True-False:** 7. False



8. True 9. False 10. False 11. False 12. False

Gap-Fill: 13. grow 14. aging 15. Obesity 16. brain 17. diseases 18. Necroptosis

## Vocabulary quizzes

### Multiple Choice ( Select the Correct answer for each question. )

1. Which of the following activities is essential for maintaining physical fitness and overall health?  
Option: Watching TV  
Option: Eating fast food  
Option: Regular exercise  
Option: Sleeping all day
2. What do we call the substances found in food that are essential for growth energy production and overall health?  
Option: Harmful elements  
Option: Empty calories  
Option: Nutrients  
Option: Toxins
3. A health condition lasting for a long period or constantly recurring is known as:  
Option: Acute  
Option: Chronic  
Option: Temporary  
Option: Sporadic
4. Inflammation often leads to which common visible symptom?  
Option: Fever  
Option: Swelling  
Option: Fatigue  
Option: Hunger
5. What term describes the process of controlling or maintaining a specific condition within a certain range?  
Option: Accelerate  
Option: Regulate  
Option: Disrupt  
Option: Ignore
6. Which substance derived from food provides the power to perform physical or mental activities?  
Option: Oxygen  
Option: Fiber



Option: Protein

Option: Energy

7. The initiation or starting of a process or function is known as:

Option: Deactivation

Option: Inactive state

Option: Activation

Option: Reactivity

8. Which method is commonly used to collect data by asking questions to a group of people for statistical analysis?

Option: Laboratory tests

Option: Surveys

Option: Guesswork

Option: Intuition

9. The way in which a person or animal acts or conducts oneself especially in response to a particular situation is referred to as:

Option: Attitude

Option: Behavior

Option: Appearance

Option: Reaction

10. Substances formed by the union of two or more elements are called:

Option: Elements

Option: Compounds

Option: Mixtures

Option: Solutions

**Gap-Fill ( Fill in the blanks with the correct word from the vocabulary list. )**

11. \_\_\_\_\_ are a unit of energy used to indicate the amount of energy that foods will produce in the human body.

12. \_\_\_\_\_ are conducted to gather information and insights from a target audience to make informed decisions.

13. Showing \_\_\_\_\_ towards others involves understanding sharing and being sensitive to



their emotions and experiences.

14. Plants contain various \_\_\_\_\_ compounds that have healing properties and are used in traditional medicine.

15. Regular exercise helps keep the body \_\_\_\_\_ and improves overall health and well-being.

16. Understanding the factors that influence human \_\_\_\_\_ allows for better prediction and management of actions.

17. Eating a balanced diet ensures that the body has enough \_\_\_\_\_ to perform daily activities.

18. Consuming foods rich in \_\_\_\_\_ can aid digestion and help prevent constipation.

19. Feeling \_\_\_\_\_ can be a sign of physical or mental exhaustion and may indicate the need for rest.

20. \_\_\_\_\_ play a crucial role in building and repairing tissues supporting immune function and as a source of energy.

**Matching Sentences ( Match each definition to the correct word from the vocabulary list. )**

21. Plants release during photosynthesis which is essential for the survival of most living organisms.
22. is a form of programmed cell death that is regulated differently from apoptosis.
23. The condition of being grossly overweight or having an excessive amount of body fat is referred to as .
24. Systematic is conducted to discover new knowledge validate existing theories or solve practical problems.
25. Medical treatment involving the use of chemical agents to destroy cancer cells is known as .



26. The process by which the body breaks down food into smaller components for absorption and energy production is called .

27. is the body's response to injury or infection characterized by redness swelling heat and pain.

28. functions include perception memory thinking and awareness.

29. A illness or condition is one that persists over a long period or tends to recur.

30. are substances made up of two or more elements that are chemically bonded together.

## Answer

**Multiple Choice:** 1. Regular exercise 2. Nutrients 3. Chronic 4. Swelling 5. Regulate 6. Energy 7. Activation 8. Surveys 9. Behavior 10. Compounds

**Gap-Fill:** 11. Calories 12. Surveys 13. Empathy 14. Medicinal 15. Fit 16. Behaviour 17. Energy 18. Fiber 19. Tired 20. Proteins

**Matching sentence:** 1. Oxygen 2. Necroptosis 3. Obesity 4. Research 5. Chemotherapy 6. Digestion 7. Inflammation 8. Cognitive 9. Chronic 10. Compounds

## CATEGORY

1. Health - LEVEL1

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## Author

aimeeyoung99