Study Reveals Common Mushroom Fiber May Combat Flu

Description

The unassuming mushroom, a remarkable member of the fungi kingdom, possesses an abundance of potential. Prior investigations have indicated that mushrooms may mitigate the risk of depression, foster the growth of brain cells, and offer protective effects against cancer. Recent research further suggests that these fungi might also confer a degree of protection against influenza.

A team of researchers from McGill University in Canada discovered that the beta-glucan fibers present in various mushroom species can function as a defensive barrier against the flu. Their findings revealed that these fibers limit lung inflammation in mice subjected to viral infection post-administration of beta-glucan.

Furthermore, mice treated with these fibers exhibited enhanced pulmonary function and a reduced likelihood of severe illness and mortality when infected with the flu virus. Although human clinical trials are necessary for further insights, these preliminary results present a promising avenue for ongoing research.

Lung scans
Mice administered beta-glucan displayed diminished lung damage from influenza infections.
(Khan et al., *Nature Immunology*, 2025)

"Beta-glucan, located within the cell walls of all fungi, including those inhabiting our bodies as part of the human microbiome, has intriguing implications," stated Maziar Divangahi, an immunologist at McGill University.

"It is intriguing to consider that variations in the levels and types of fungi present in an individual could influence their immune response to infections, potentially mediated by beta-glucan."

Though beta-glucan is well-established for its ability to enhance immunity, this research sought to explore its potential for disease tolerance. This concept encompasses the idea of diminishing the effects of viral infections on the body, rather than merely eradicating the pathogens as traditional antiviral therapies do.

Notably, beta-glucan appears to reprogram immune cells to better manage influenza infections. Mice receiving treatment exhibited an increased population of immune cells known as neutrophils, which operated with greater regulation than usual.

The researchers emphasized that this reprogramming was essential, as it mitigated the risk of neutrophils

becoming hyperactive in their fight against infection—a common precursor to lung inflammation and subsequent complications, such as pneumonia, following flu infections.

"While neutrophils are typically associated with inflammation, beta-glucan has the remarkable ability to recalibrate their function to reduce it," noted Kim Tran, another McGill immunologist.

Additionally, the modified neutrophils persisted for several weeks in the treated mice, suggesting that a therapeutic approach utilizing beta-glucan could provide enduring protection, although further research is essential to fully comprehend its implications.

While the advantages of disease tolerance are well-recognized—and crucial for saving lives—our understanding of the underlying mechanisms remains limited. This investigation provides valuable insights and may pave the way for future applications in addressing similar respiratory ailments.

"It is striking to observe how beta-glucan can reprogram select immune cells, such as neutrophils, to effectively manage excessive inflammation in the lungs," remarked Nargis Khan, an immunologist now affiliated with the University of Calgary in Canada.

This groundbreaking research has been published in *Nature Immunology*.

Vocabulary List:

1. **Mitigate** /ˈmɪtɪˌgeɪt/ (verb): To make something less severe serious or painful.
2. **Inflammation** /ɪnˌflæməˈteɪʃən/ (noun): A localized physical condition characterized by redness swelling heat and pain often as a reaction to injury or infection.
3. **Neutrophils** /ˈnjuːtrəˌfɪlz/ (noun): A type of white blood cell that helps the body fight infection.
4. **Reprogramming** /ˌriːˈproʊgræmɪŋ/ (verb): The act of changing the function or characteristics of cells.
5. **Tolerance** /ˈtɒlərəns/ (noun): The ability to endure adverse conditions or the presence of pathogens without severe reaction.
6. **Enduring** /ɪnˈdʊrɪŋ/ (adjective): Lasting over a period of time; durable.

Comprehension Questions

Multiple Choice

1. What are some potential benefits of mushrooms according to prior investigations?

Option: Mitigate risk of depression
Option: Foster growth of brain cells
Option: Offer protective effects against cancer
Option: All of the above

2. Which university were the researchers who discovered the protective effects of beta-glucan against the flu affiliated with?

Option: McGill University
Option: Harvard University
Option: Oxford University
Option: Stanford University

3. What is one of the outcomes observed in mice treated with beta-glucan fibers when infected with the flu virus?

Option: Increased lung inflammation
Option: Enhanced pulmonary function
Option: Severe illness and mortality
Option: None of the above

4. Which immune cells were reprogrammed by beta-glucan to better manage influenza infections?

Option: Lymphocytes
Option: Neutrophils
Option: Monocytes
Option: Eosinophils

5. What is one potential consequence of neutrophils becoming hyperactive in fighting infections?

Option: Lung inflammation
Option: Enhanced immunity
Option: Brain cell growth
Option: Reduced inflammation

6. Where was the groundbreaking research on beta-glucan published?

Option: Journal of Immunology
Option: Nature Immunology
Option: Cell Reports

Option: Science Alert

True-False

7. Mushrooms have been proven to mitigate the risk of cancer.

8. Beta-glucan fibers have no effect on lung inflammation in mice.

9. Traditional antiviral therapies aim to eradicate pathogens rather than diminish their effects.

10. Neutrophils are typically associated with reducing inflammation in the body.

11. The research findings indicate that beta-glucan can provide enduring protection against influenza.

12. Understanding the underlying mechanisms of disease tolerance is unnecessary for applying it in medical practice.

Gap-Fill

13. Beta-glucan is primarily located within the cell walls of all fungi, including those inhabiting our bodies as part of the human microbiome, leading to intriguing _____.

14. Mice treated with beta-glucan fibers exhibited enhanced _____ function when infected with the flu virus.

15. The capability of beta-glucan to reprogram immune cells for managing influenza infections underscores a potential for _____.

16. Understanding the advantages of disease tolerance is crucial for addressing similar _____ ailments.

17. Nargis Khan, an immunologist affiliated with the University of Calgary in Canada, commented on the

remarkable ability of beta-glucan to recalibrate the function of select immune cells to reduce

_____.

18. The groundbreaking research on beta-glucan and disease tolerance was published in the journal

_____.

Answer

Multiple Choice: 1. All of the above 2. McGill University 3. Enhanced pulmonary function 4. Neutrophils 5. Lung inflammation 6. Nature Immunology
True-False: 7. False 8. False 9. True 10. False 11. True 12. False
Gap-Fill: 13. implications 14. pulmonary 15. enduring protection 16. respiratory 17. inflammation 18. Nature Immunology

Vocabulary quizzes

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

1. What is the primary goal of mitigation in disaster management?

Option: A. Increase the damage
Option: B. Reduce the impact
Option: C. Delay the response
Option: D. Intensify the situation

2. Which type of white blood cells are the most abundant in the human body?

Option: A. Monocytes
Option: B. Lymphocytes
Option: C. Basophils
Option: D. Neutrophils

3. What is a common symptom of Parkinson's disease?

Option: A. Fever
Option: B. Tremor
Option: C. Rash
Option: D. Headache

4. Which term best describes a natural disaster with severe consequences?

Option: A. Mild
Option: B. Catastrophic
Option: C. Average
Option: D. Insignificant

5. Which term is used to describe something that introduces new ideas or methods?

Option: A. Traditional
Option: B. Innovative
Option: C. Conventional
Option: D. Outdated

6. What does it mean to scrutinize something?

Option: A. Ignore
Option: B. Examine closely
Option: C. Jump to conclusions
Option: D. Disregard

7. Which term refers to the mental action or process of acquiring knowledge and understanding?

Option: A. Perception
Option: B. Cognition
Option: C. Emotion
Option: D. Intuition

8. What is the molten rock material beneath the Earth's surface called?

Option: A. Lava
Option: B. Granite
Option: C. Magma
Option: D. Sediment

9. If a soil is said to be enriched what does it contain in higher amounts?

Option: A. Nutrients
Option: B. Toxins
Option: C. Water
Option: D. Sand

10. What term is used to describe estimates or forecasts of future events?

Option: A. Reflections
Option: B. Projections
Option: C. Memories
Option: D. Revisions

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

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

12. _____ of cells can result in altered behavior or function.

13. _____ waves are vibrations caused by earthquakes.

14. The sound of gentle waves and the sight of a peaceful landscape can evoke a sense of _____.

15. Being able to _____ potential risks can help in developing effective risk management strategies.

16. Each artist has unique _____ that can be identified in their works.

17. The _____ of a situation can change rapidly requiring adaptability.

18. Stock prices are subject to _____ in response to market conditions.

19. His _____ love for music has been evident since childhood.

20. Maintaining _____ during exams is crucial for good performance.

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

21. During a hurricane residents may need to leave their homes and move to safer locations.
22. Feeling nervous or fearful about an upcoming test is common among students.
23. The robot functions without direct human control.
24. The ability to accept differences in opinions and beliefs is a sign of maturity.
25. Combining information from various sources is essential for effective decision-making.

26. After the company's losses a change in strategy led to a remarkable turnaround in profits.
27. A individual can accurately judge the quality of products or services.
28. The study of galaxies stars and other celestial bodies falls within the realm of science.
29. The process of water turning into ice is an example of
30. These white blood cells are the first responders to sites of infection or injury.

Answer

Multiple Choice: 1. B. Reduce the impact 2. D. Neutrophils 3. B. Tremor 4. B. Catastrophic 5. B. Innovative 6. B. Examine closely 7. B. Cognition 8. C. Magma 9. A. Nutrients 10. B. Projections
Gap-Fill: 11. Inflammation 12. Reprogramming 13. Seismic 14. Tranquility 15. Anticipate 16. Signatures 17. Dynamics 18. Fluctuations 19. Enduring 20. Concentration
Matching sentence: 1. Evacuate 2. Apprehensive 3. Autonomously 4. Tolerance 5. Synthesizing 6. Reversal 7. Discerning 8. Cosmic 9. Crystallization 10. Neutrophils

CATEGORY

1. Sci/Tech - LEVEL5

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