



Tinnitus Linked to Key Brain Chemical, Study Finds

Description

The neurotransmitter serotonin, known for managing mood, may also affect the severity of tinnitus, according to new research. Tinnitus is often described as a noise, like ringing or hissing, that only the patient can hear.

Scientists in the US and China conducted a study on mice. They found that increasing serotonin signals in a particular brain area made tinnitus-like symptoms worse. This is important because serotonin is usually targeted to help with depression and anxiety. This study could help create treatments that improve mood without worsening tinnitus.

The researchers discovered a connection between serotonin and the auditory system, which processes sound. When they switched off this circuit in mice, the tinnitus-like symptoms decreased. The study explains how activity in certain brain areas relates to the symptoms of tinnitus.

Researchers used light and drugs to see how serotonin affected the mice. When activated, the mice behaved as if they were hearing sounds that were not there.

This research shows a real link between serotonin and tinnitus. It highlights the need for careful treatment when managing depression or anxiety in patients who also have tinnitus. New drugs could help separate the helpful effects of antidepressants from negative effects on hearing.

Vocabulary List:

1. **neurotransmitter** //,nʊrəʊ'træns,mɪtər// (noun): a chemical in the brain that sends messages
2. **tinnitus** //tɪ'nɪtəs// (noun): a sound someone hears that others cannot
3. **severity** //sə'verəti// (noun): how bad or serious a problem is
4. **auditory** //ˈɔːdɪtəri// (adjective): relating to hearing or the ears
5. **circuit** //ˈsɜːkɪt// (noun): a connected system of nerves or brain cells
6. **symptoms** //ˈsɪmptəmz// (noun): signs that show a disease or problem

Comprehension Questions

Multiple Choice



1. What is serotonin primarily known for managing?
 - Option: Hearing
 - Option: Mood
 - Option: Vision
 - Option: Taste

2. What kind of symptoms did the study on mice find were worsened by increasing serotonin signals?
 - Option: Hearing loss
 - Option: Tinnitus-like symptoms
 - Option: Depression
 - Option: Anxiety

3. What did researchers use to examine the effects of serotonin on mice?
 - Option: Sound waves
 - Option: Light and drugs
 - Option: Electrodes
 - Option: Magnetic fields

4. In what regions were scientists based who conducted the serotonin and tinnitus study?
 - Option: US and Canada
 - Option: Australia and New Zealand
 - Option: US and China
 - Option: UK and Germany

5. What could new drugs potentially help separate in patients with tinnitus?
 - Option: Hearing and vision
 - Option: Mood and hearing
 - Option: Sound and light
 - Option: Pain and discomfort

6. When the serotonin circuit was switched off in mice, what happened to their tinnitus-like symptoms?
 - Option: They increased
 - Option: They remained the same
 - Option: They decreased
 - Option: They disappeared completely

True-False



7. Tinnitus can be heard by others around the patient.
8. The study indicates serotonin could be detrimental for patients with tinnitus.
9. Serotonin is primarily used to worsen symptoms of depression.
10. The study's findings have no implications for treating anxiety in tinnitus patients.
11. Researchers used only behavioral observations without tools during the study.
12. When the auditory system circuit was activated in the mice, they experienced false sound perceptions.

Gap-Fill

13. The neurotransmitter serotonin is known for managing mood as well as affecting the severity of _____.
14. Increasing serotonin signals in a particular brain area made tinnitus-like symptoms _____.
15. The study found a connection between serotonin and the _____ system.
16. When researchers switched off the serotonin circuit, the symptoms of tinnitus-like behavior _____.
17. This research shows a link between serotonin and _____.
18. New drugs could help separate the helpful effects of antidepressants from negative effects on _____.

Answer

Multiple Choice: 1. Mood 2. Tinnitus-like symptoms 3. Light and drugs 4. US and China 5. Mood and hearing
6. They decreased

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

Gap-Fill: 13. tinnitus 14. worse 15. auditory 16. decreased 18. hearing



Vocabulary quizzes

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

1. What are microorganisms that can cause disease in living organisms?
Option: Bacteria
Option: Viruses
Option: Fungi
Option: Parasites
2. Which of the following is used to kill bacteria and viruses on surfaces?
Option: Antibiotics
Option: Disinfectants
Option: Antiseptics
Option: Vaccines
3. What term is used to describe bacteria that do not respond to antibiotics?
Option: Sensitive
Option: Vulnerable
Option: Resistant
Option: Infectious
4. What chemical substance transmits signals across a synapse between neurons?
Option: Neurotransmitter
Option: Hormone
Option: Protein
Option: Enzyme
5. What condition is characterized by hearing ringing or buzzing in the ears?
Option: Hearing Loss
Option: Tinnitus
Option: Ear Infection
Option: Vertigo
6. Which system is responsible for digestion and absorption of nutrients?



- Option: Nervous System
- Option: Respiratory System
- Option: Circulatory System
- Option: Gastrointestinal System

7. What accumulations in the brain are often associated with Alzheimer's disease?

- Option: Cysts
- Option: Tumors
- Option: Plaques
- Option: Lesions

8. What structural component helps maintain cell shape and transport within neurons?

- Option: Mitochondria
- Option: Microtubules
- Option: Ribosomes
- Option: Nuclei

9. What are the signs indicating the presence of a disease or condition?

- Option: Treatment
- Option: Symptoms
- Option: Diagnosis
- Option: Prevention

10. What type of response is the body's method of fighting injuries or infections?

- Option: Inflammatory
- Option: Antibiotic
- Option: Antigen
- Option: Viral

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

- 11. Viruses can invade _____ and reproduce within them.
- 12. It is important to use _____ to prevent infection in healthcare settings.
- 13. Some bacteria develop _____ to protect themselves against antibiotics.
- 14. Dopamine is a type of _____ that plays a key role in mood regulation.
- 15. Patients with _____ often experience hearing ringing or buzzing sounds.



16. The _____ tract plays a crucial role in digestion and nutrient absorption.
17. Amyloid _____ are linked to Alzheimer's disease and interfere with neuron function.
18. _____ are essential for maintaining the shape of neurons.
19. Fever and fatigue are common _____ of infection.
20. An _____ response is often seen in autoimmune diseases.

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

21. Viruses are smaller than bacteria and require a host to multiply.
22. Disinfectants are crucial for maintaining hygiene in medical facilities.
23. Antibiotic-resistant strains of bacteria pose a significant public health challenge.
24. Neurotransmitters are essential for sending signals between nerve cells.
25. Tinnitus can be caused by exposure to loud noises over time.
26. The gastrointestinal system includes the esophagus, stomach, and intestines.
27. Plaques can build up in the brain and disrupt normal cognitive function.
28. Microtubules are vital for cell division and maintaining cell structure.
29. Recognizing the symptoms early can improve treatment outcomes.
30. Inflammatory responses are essential for healing but can also cause damage if excessive.

Answer

Multiple Choice: 1. Viruses 2. Disinfectants 3. Resistant 4. Neurotransmitter 5. Tinnitus 6. Gastrointestinal System 7. Plaques 8. Microtubules 9. Symptoms 10. Inflammatory

Gap-Fill: 11. host cells 12. disinfectants 13. resistance 14. neurotransmitter 15. tinnitus 16. gastrointestinal 17. plaques 18. Microtubules 19. symptoms 20. inflammatory

Matching sentence: 1. viruses 2. disinfectants 3. resistant 4. neurotransmitter 5. tinnitus 6. gastrointestinal 7. plaques 8. microtubules 9. symptoms 10. inflammatory



CATEGORY

1. Health - LEVEL2

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