

Cystic Fibrosis Research News

Title:

D-METHIONINE REDUCES TOBRAMYCIN-INDUCED OTOTOXICITY WITHOUT ANTIMICROBIAL INTERFERENCE IN ANIMAL MODELS

Authors:

Daniel J. Fox^{a,b,c}; Morris D. Cooper^c; Cristian A. Speil^e; Melissa H. Roberts^c; Susan C. Yanik^a; Robert P. Meech^a; Tim L. Hargrove^a; Steven J. Verhulst^d; Leonard P. Rybak^a; Kathleen C. M. Campbell^{a,b}

Affiliations:

^aDepartment of Surgery;

^bDepartment of Pharmacology;

^cDepartment of Medical Microbiology, Immunology, and Cell Biology;

^dStatistics and Research Consulting;

^eDepartment of Internal Medicine;

Southern Illinois University School of Medicine, Springfield, Illinois, USA

What was your research question?

Can an amino acid, D-methionine (D-met) protect from hearing loss caused by tobramycin (an antibiotic) without affecting the antibiotic's ability to fight infection?

Why is this important?

Tobramycin is commonly used to treat people with cystic fibrosis. However, tobramycin can also cause permanent hearing loss. If D-met can protect from tobramycin-induced hearing loss without affecting its ability to fight infection, then it may help to reduce hearing loss incidence and improve therapy for people with cystic fibrosis.

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What did you do?

Hearing tests were performed in guinea pigs before and 2, 4, and 6 weeks after 21 days of D-met and tobramycin treatments. Six weeks after the first treatments, hearing tests and cochlear (part of the inner ear) samples were collected to measure D-met protection.

Bacterial and animal studies were performed to test D-met for potential interference with tobramycin's ability to fight infection. D-met, tobramycin, and bacteria were combined and growth curves were measured to identify potential antibiotic interference. D-met, tobramycin, and bacteria were also administered to mice to identify potential antibiotic interference.

What did you find?

Hearing tests and cochlear samples measured D-met protection from tobramycin-induced hearing loss. An optimal protective D-met dose was determined. Further, bacterial and animal studies identified no D-met-induced interference with tobramycin's ability to kill bacteria in bacterial or animal experiments.

What does this mean and reasons for caution?

D-met significantly protects from tobramycin-induced hearing loss without affecting the antibiotic's ability to fight infection. Therefore, people who are given tobramycin may also be given D-met to protect from tobramycin's harmful hearing loss effects.



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What's next?

With promising animal studies, we now need to test D-met's protective effect in clinical trials. People with cystic fibrosis will greatly benefit from D-met's safe and effective protection from tobramycin-induced hearing loss.

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cfresearchnews@gmail.com