

NOVEL COMBINATION THERAPY THAT IMPROVES RESISTANCE TO TETRACYCLINE ANTIBIOTICS

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Value Proposition: *New composition of matter that combines tetracycline class compounds with destructase inhibitors to overcome resistance to tetracycline antibiotics.*

Technology Description

Researchers at Washington University in St. Louis have developed an enzymatic mechanism and an inhibitor for improving the effectiveness of tetracycline antibiotics. Tetracycline is one of the three most used antibiotic classes in both clinical and agricultural settings, and some tetracyclines are used as last-resort antibiotics against multidrug resistant pathogens. Bacteria can develop resistance to these broad-spectrum antibiotics with tetracycline destructases – enzymes that degrade and thereby inactivate tetracyclines before they can interrupt bacterial protein production.

This invention allows for the development of novel combinations of tetracycline class compounds with destructase inhibitors, which forms the basis of a combination therapy with traditional tetracycline antibiotics to overcome resistance via enzymatic inactivation.

Stage of Research

Discovery stage

Publications

- Park, J. *et al.* [Plasticity, dynamics, and inhibition of emerging tetracycline resistance enzymes](#). *Nat. Chem. Biol.* **13**, 730 (2017)
- L. Markley, J. *et al.* [Semisynthetic Analogues of Anhydrotetracycline as Inhibitors of Tetracycline Destructase Enzymes](#). *ACS Infect. Dis.* **5**, 618–633 (2019)

Applications

- Diagnostic that identifies tetracycline resistant infections
- Treatment of microbial infections

Key Advantages

- First therapy developed for rapidly emerging antibiotics resistance mechanism
- Solution to overcome tetracycline antibiotic resistance

Patents

[Inhibition and Diagnostics of Emerging Tetracycline Resistance Enzymes](#) (US Patent No. 10,273,468 B2)

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