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Carbonic Anhydrase Inhibitors for Treatment of Neisseria Gonorrhoeae

Novel drug analogs targeting carbonic anhydrase offer a narrow-spectrum, resistance-preventing treatment for antibiotic-resistant gonorrhea.

Researchers at Purdue University have developed a new treatment for the drug resistant pathogen Neisseria gonorrhoeae. CDC has reported a 67% increase in gonorrhoea cases, a sexually transmitted disease, between 2013 and 2017. Pathogenic strains of gonorrhea are notorious for rapidly developing resistance to the current line of antibiotic treatments rendering them futile. The new treatment developed at Purdue leverages FDA approved carbonic anhydrase inhibitors (CAIs) to develop novel analogs that are potent with a narrow spectrum of action to treat gonorrhea. These analogs target the enzyme, carbonic anhydrase in the bacteria, which is crucial for the bacteria to maintain CO2 and pH homeostasis. They do not target other commensal bacteria that are required to maintain healthy microbiome. Most importantly, their mechanism of action prevents the development of rapid antibiotic resistance.

Advantages:

-Selectively targets N. gonorrhea

-Does not target gut and/or vaginal microbiota

-Prevents rapid resistance development

-Works synergistically with approved antibiotics

Potential Applications:

-Treatment of Gonorrhea and treating medical conditions related to antibiotic resistant strains of N.gonorrhoeae.

TRL: 3

Intellectual Property:

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