Washington University in St. Louis
Office of Technology Management

POTENT INHIBITORS OF PROTEIN SYNTHESIS FOR THE TREATMENT OF TOXOPLASMOSIS

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Value Proposition: *New chemical matter that blocks protein synthesis, eliminating infection and providing improved treatment for Toxoplasmosis.*

Technology Description

Researchers at Washington University in St. Louis have identified a new chemical matter that can inhibit an essential enzyme in the parasite Toxoplasma gondii. Toxoplasmosis is a debilitating infection that causes severe disease due to congenital infection in infants or in immune-compromised adult individuals. In South America, toxoplasmosis causes serious ocular disease and can lead to loss of vision. Currently, it is estimated that upwards of 30 million people suffer from severe ocular toxoplasmosis in Brazil alone. Existing therapies suppress the infection but do not cure the chronic infection, which can reactivate and cause serious illness. In addition, there are serious side effects with the current standard of care.

This discovery defines a new chemical scaffold that specifically inhibits the parasite phenylalanine tRNA synthetase (PheRS). The inhibitors block protein synthesis and rapidly arrest growth leading to parasite death. This discovery may enable the production of new medicines with greater efficacy and fewer side effects.

Publications

- Ence, C. C., Uddin, T., Borrel, J., Mittal…Sibley, L. D., & Chatterjee, A. K. (Accepted/In press). Bicyclic Pyrrolidine Inhibitors of Toxoplasma gondii Phenylalanine t-RNA Synthetase with Antiparasitic Potency In Vitro and Brain Exposure. *ACS Infectious Diseases*.

Applications

- Treatment of Toxoplasmosis

Key Advantages

- Blocks protein synthesis and quickly stops growth leading to rapid kill
- Animal studies demonstrate radical cure of acute infection and better performance than current standard of care
- Enables the production of medication that has fewer side effects and can improve the effectiveness of treatment

Patents

Patent application filed

Related Web Links – Laurence Sibley Profile**;** Sibley Lab