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TITLE: Compounds for Treating Parasitic Infections

Key Investigator
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Field
Therapeutic

Technology
Drug Discovery
Parasitology
Infection
Immunology

Advantages
Novel antiparasitic compounds
Good oral bioavailability
Increased efficacy
Low toxicity

Status
Available for licensing

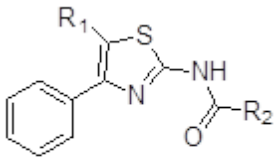
Patent Status
U.S. Patent 10,227,320
U.S. Patent 10,662,168

UMB Docket Reference
FX-2015-021

Summary
Researchers at the University of Maryland, Baltimore and the University of Maryland, College Park have synthesized a new class of 1,3-thiazolidine-2,4-dione derivatives that exhibit potent activity against several protozoan parasites, including Plasmodium, Toxoplasma, and Cryptosporidium. These compounds have demonstrated good efficacy in animal models of parasitic infections, along with good oral bioavailability and low toxicity, making them promising candidates for further development as therapeutic agents for parasitic infections.

Market
The global anti-parasitic drugs market is projected to grow at a CAGR of 5.1% from 2020 to 2025 and reach $13.5 billion by 2025. This growth can be attributed to the rising prevalence of parasitic infections and the emergence of drug-resistant strains, which have created a strong demand for new and effective treatments. According to the World Health Organization, there were an estimated 229 million cases of malaria worldwide in 2019, with an estimated 409,000 deaths. Toxoplasmosis and cryptosporidiosis also affect a significant portion of the global population.

Technology
The discovery and development of novel compounds for the treatment of parasitic infections caused by protozoa are urgently needed to combat the increasing incidence of these diseases. Researchers at the University of Maryland, Baltimore have synthesized a new class of 1,3-thiazolidine-2,4-dione derivatives that exhibit potent activity against several protozoan parasites, including Plasmodium, Toxoplasma, and Cryptosporidium.



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The synthesized compounds have a general formula of R1-R2-C(=O)-C(R3)=N-C(S)=O, where R1 is a substituted or unsubstituted aryl or heteroaryl group, R2 is a hydrogen, halogen, or substituted or unsubstituted alkyl or aryl group, and R3 is a hydrogen, halogen, or substituted or unsubstituted alkyl group. The compounds may also have a substituent on the nitrogen atom or the carbon atom adjacent to the nitrogen atom.

In vitro and in vivo assays have demonstrated the potent activity of these compounds against protozoan parasites, with good efficacy in animal models of parasitic infections. Additionally, the compounds show good oral bioavailability and low toxicity, making them promising candidates for further development as therapeutic agents for parasitic infections.

The synthesized compounds can be administered by various routes, including oral, intravenous, and intraperitoneal routes, providing options for the development of different formulations. Furthermore, the invention provides methods for the treatment of parasitic infections using the compounds of the invention, either alone or in combination with other therapeutic agents. These compounds represent a significant advancement in the development of therapeutic agents for parasitic infections and have the potential to provide an important new tool in the fight against these debilitating diseases.

References:

1. Global anti-parasitic drugs market report by Mordor Intelligence: https://www.mordorintelligence.com/industry-reports/anti-parasitic-drugs-market
2. World Health Organization malaria report 2020: https://www.who.int/publications/i/item/9789240015791

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