Small molecule inhibitors for malaria treatment and prevention

Technology #cu13311

This technology identifies a class of small molecules that inhibit DNA synthesis in plasmodium falciparum.

Unmet Need: Nonresistant drug therapy for treatment of malaria

Malaria is the cause of a global health crisis that affects 500 million people worldwide each year. Unfortunately, the most prevalent parasite that causes malaria, Plasmodium falciparum, is adaptive and readily develops drug resistance. As a result, resistance to artemisinin-based combination therapy (ACT), the current frontline treatment for malaria, has been documented in Southeast Asia and is expected to spread rapidly and diminish its efficacy. As such, there is a growing need for new antimalarial therapies.

The Technology: Small molecule PfENT1 inhibitors prevent DNA synthesis in Plasmodium falciparum

This technology describes a class of small molecules that have direct inhibition on DNA synthesis in Plasmodium falciparum. Using a high-throughput screen, this technology identified several inhibitors of the protein Equilibrative Nucleoside Transporter 1 (PfENT1), a protein that facilitates nucleoside uptake into the parasite. The identified antimalarial compounds could be used to treat malaria infection and prevent the spread of resistant strains.

The identified PfENT1 inhibitors have been demonstrated to inhibit P. falciparum growth in culture.

Applications:

- Treatment of malaria and cerebral malaria infection
- Prophylactic treatment for malaria
- Identifies a potential drug target for other parasitic diseases

Advantages:

- Direct drug target for the malaria parasite, P. falciparum
Identified PfENT1 inhibitors are not part of the artemisinin family
Could be combined with existing antimalarial therapies to combat resistance

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Patent Information:
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Related Publications:

Tech Ventures Reference:
- IR CU13311
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