Researchers at the University of South Florida have developed novel methods and quinolone-based compounds for the treatment of malaria.

Malaria, which is a parasitic disease transmitted by mosquitoes, is considered an endemic in 97 countries worldwide. Furthermore, it is estimated that 3.4 billion people are at risk of contracting malaria. Although the number of deaths caused by malaria has decreased significantly since the turn of the century, resistance to current treatments is a growing problem. The World Health Organization states that without new therapeutics, all of the strides made in reducing malaria related deaths could be reversed due to resistant strains. Therefore, researchers have begun to optimize old antimalarial agents and drugs, evaluating these in current preclinical efficacy models and developing more efficient treatment methods.

USF researchers have developed quinolone-based compounds and methods of treatment that can be used to prevent and treat malaria. A quinolone is class of antibiotics used to treat a large variety of infections, and is known to exhibit antiplasmodial and antimalarial activity. Specifically, USF researchers have optimized a series of antimalarial piperazine-substituted 4(1H)-quinolones to increase their solubility and bioactivity, making them highly efficacious against multiple stages of malaria. The compounds and formulations in this technology are effective against Plasmodium parasites, which cause malaria in humans. These compounds are effective when the parasite is in the liver stage or blood stage, and can prevent or reduce transmission of the parasite to the mosquito.

**ADVANTAGES:**
- High aqueous solubility
- Targets multiple stages of malaria
- Effective against multidrug resistant malaria strains
- Prevents malaria infections and treats current infections

**Optimized 4(1H)-Quinolones for the Treatment of Malaria**

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**Various Concentrations of 4(1H)-Quinolones in Mice Show Improved Survival Rates Compared to Controls**

![Graph showing survival rates of mice treated with various concentrations of 4(1H)-quinolones compared to untreated controls.](image-url)