

The “*World Malaria Report-2022*”, shows that malaria havoc consistently strikes the world, and around **619,000** people lost their lives in **2021** due to this fatal infection. Along with this, there were 247 million cases of malaria reported globally in **2021**. The life-threatening and most deadly malaria infection for humans is primarily caused by the parasite *Plasmodium falciparum*. In the **1970s**, isolating a blockbuster endoperoxide drug, artemisinin, from the traditional Chinese herb *Artemisia annua* became a milestone in medical science, saving over **200 million** lives in the next four decades. Presently, to reduce the worldwide disease burden and slow down drug resistance *World Health Organisation (WHO)* has recommended *Artemisinin-based Combination Therapies* as a ‘*Drug of First Choice*’ for malaria treatment. Similarly, cancer is another notorious threat to human lives, accounting for nearly **10 million** fatalities in **2020**. In addition to promising antimalarial activity, several artemisinin-based endoperoxides have also shown promising anticancer activity in different clinical trials. Nowadays, as a result of mutations in the numerous drug transporter genes, the drug and multidrug-resistant (MDR) strains of *Plasmodium* and cancer are rapidly spreading. In the absence of reliable medicine, the demand for novel therapeutics is growing. Therefore, in the quest for more potent medications, we have prepared a project proposal in which some novel dual potent functionalized synthetic endoperoxides will target both fatal diseases. Moreover, to determine the dual nature of newly synthesized compounds, we have planned to test them against various *Plasmodium* and cancer cells. Furthermore, the anticancer activity of the most active lead molecule will also be tested *in vivo* using the chicken embryo chorioallantoic membrane (CAM) model. Certainly, this research will contribute new wealth in the area of antimalarial/anticancer chemotherapy with an unlimited potential impact on society and humanity.

