PLASMODIUM VIVAX TRYPTOPHAN-RICH ANTIGENS: PROBABLE DRUG/VACCINE TARGETS

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Man and malaria continue their cold war to prove who is smarter. More than a century ago Sir Ronald Ross discovered the life cycle of malaria parasite while working in Hyderabad, India, and proposed to break this cycle to control malaria. However, this proved to be very difficult task since the parasite and its mosquito vector developed chemical resistance very fast. Continuous efforts are therefore required to identify newer drug and vaccine targets. Among human malaria parasites, *Plasmodium vivax* is highly prevalent in Southeast Asia. There is no vaccine available for this parasitic disease. Therefore, identification of potential drug/vaccine targets of this non-cultivable human malaria parasite is needed. In this regard, we have reported several *P.vivax* tryptophan-rich antigens (PvTRAgs) whose counterparts in murine malaria are important vaccine candidates. These PvTRAgs show a higher seropositivity rates and Th2 biased cytokine production among *P.vivax* exposed individuals. Sequences of majority of these PvTRAgs were conserved in the parasite population in the field. Ten of these 36 proteins possess host erythrocyte binding activity. Their computer modeled structures were similar to each other having predominantly alpha helical structure with 3 different distinct domains. Each PvTRAg has two erythrocyte binding domains and each domain is recognized by the separate erythrocyte receptor. But these PvTRAgs share their RBC receptors. We have identified one of the receptor and its binding ectodomains to the respective PvTRAg. This receptor ligand interaction was inhibited by the antibodies against these antigens being produced during *P.vivax* infection. It is hypothesized that some of these erythrocyte binding PvTRAgs could be involved in rosetting phenomenon or help in erythrocyte invasion by the parasite. These molecules can be exploited further to develop therapeutics against malaria.