

POSTER PRESENTATIONS

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Natural infection of *Plasmodium falciparum* induces inhibitory antibodies to gametocyte development in human hosts

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From Parasite to Prevention: Advances in the understanding of malaria
Edinburgh, UK. 20-22 October 2010

Background

Gametocyte antigens of *Plasmodium falciparum* can induce immunity in patients from which further inhibits fertilization of gametes, and consequently oocyst

production in the mosquito midgut [1]. Here, we determined naturally-induced antibodies from malaria patients in Thailand and clarified effect of the antibodies on gametocyte development. Sixty-one percent of

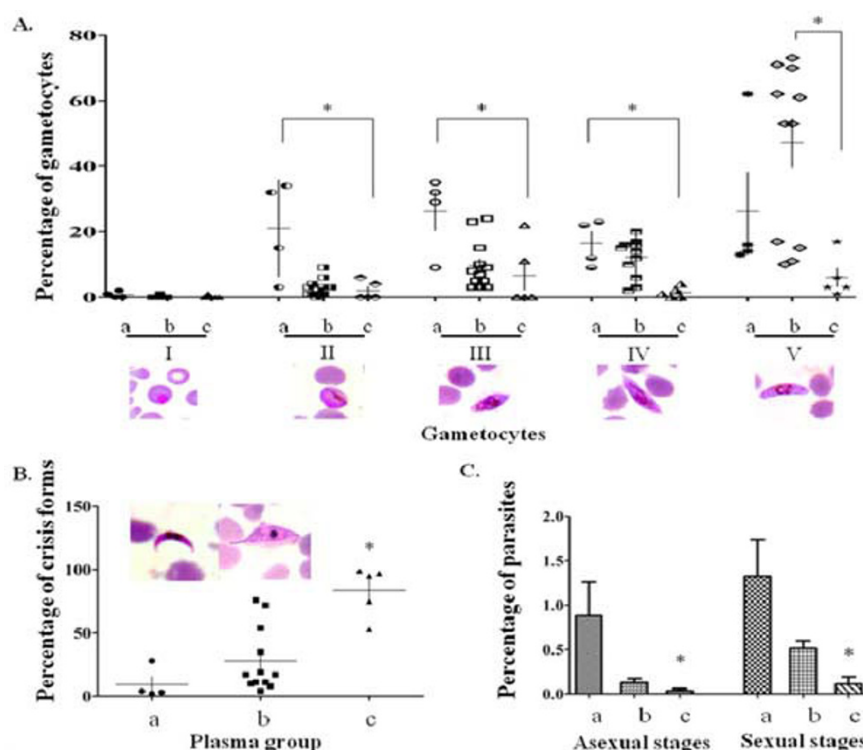


Figure 1 The effects of human plasma from malaria patients on maturation of *Plasmodium falciparum* gametocytes. The data are shown in (A) mean percentages of gametocytes from stage I to V, (B) mean percentages of crisis form of gametocytes, and (C) number of asexual and sexual stage parasites in the cocultivation cultures. (a) malaria naive plasma, (b) oocyst non-inhibitory plasma, (c) oocyst inhibitory plasma, * $P \leq 0.05$.

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P. falciparum-infected blood fed to female *Anopheles* mosquitoes showed no oocyst production. Twenty-six percent of these oocyst inhibitory plasma distorted morphology and hampered maturity of the gametocytes (Fig.1). A possible mechanism of the gametocyte inhibitory activity was shown by binding of the plasma antibodies to the live immature intraerythrocytic gametocytes during co-cultivation period.

Conclusion

Anti-gametocyte antibodies were elicited during natural malaria infection. The oocyst inhibitory antibodies diffused to and interacted with developing intraerythrocytic gametocytes and reduced number of stage II to V gametocytes, and hampered their maturation. Therefore the alternative development of transmission blocking vaccine in the high transmission area should focus on the identification of the gametocyte antigens inducing inhibitory antibodies to reduce gametocytemia.

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Published: 20 October 2010

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doi:10.1186/1475-2875-9-S2-P53

Cite this article as: Tonwong et al: Natural infection of *Plasmodium falciparum* induces inhibitory antibodies to gametocyte development in human hosts. *Malaria Journal* 2010 **9**(Suppl 2):P53.

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