

MSP-1 OF *P. FALCIPARUM* BINDS TO MULTIPLE COMPONENTS OF THE INNATE IMMUNE SYSTEM

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During the first *Plasmodium falciparum* infection, many different aspects of the innate immune system are activated to include complement, C reactive protein, lactoferrin, and IgM. The major surface protein 1 (MSP-1) of the *falciparum* merozoite is currently being developed as a candidate blood-stage vaccine. We hypothesized that MSP-1 might specifically bind to molecules of the innate immune system. We tested this hypothesis by developing ELISA assays using recombinant MSP1-42 and its components MSP1-19 and MSP1-33 as well as the first complement component C1q, C reactive protein, lactoferrin, and IgM. C1q binds MSP1-42 and this is almost entirely due to MSP-1-33 which is proteolytically shed just prior to erythrocyte penetration. Lactoferrin also binds to MSP-1 but this is less specific to MSP1-33. Experiments are currently underway to determine if mannose-binding lectin binds to MSP-1 and if MSP-1 bound to C1q is hemolytic. Competition experiments show C reactive protein blocks C1q binding to MSP1-33 suggesting that the binding site is on the collagen portion of C1q. The initiating events in natural immunity to malaria and potentially in malaria pathology may be MSP-1 binding to elements of the innate immune system.

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