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Platelets the first line of defence in malaria patients

The humble platelet is usually regarded as just a tiny cell that helps the blood clot. A study just published in the prestigious journal *Blood* has found that platelets attack and kill malaria parasites in infected humans to reduce the number of parasites circulating in their blood.

The study, led by PhD student Steven Kho and Professor Nick Anstey at Darwin's Menzies School of Health Research (Menzies), and Associate Professor Brendan McMorrان at the Australian National University (ANU), with partners in Malaysia and Indonesia, found that platelets bind to and kill parasites in patients infected with each of the major malaria parasite species which infect and kill humans – *Plasmodium falciparum*, *P. vivax*, *P. malariae* and *P. knowlesi*.

“These are important findings and are the first direct evidence of protection by platelets in any human infectious disease,” said the study’s lead author, Menzies PhD student Steven Kho.

“We found that platelets may kill around 20 per cent of circulating *Plasmodium* parasites in clinical malaria, and in *P. vivax* this may be as high as 60 per cent,” said Kho.

In collaboration with international partners, the study involved 376 people, with and without malaria, from Papua, Indonesia and Sabah, Malaysia.

“Previous studies in laboratory mice infected with malaria parasites have shown conflicting results, but the findings in human malaria are now clear- platelets kill parasites. Studies involving people with malaria are often difficult to do and they are expensive, but this study shows why they are essential” said Professor Anstey.

“The platelets bind to the human red cells, containing the malaria parasites, and kill the parasites by releasing into the red cell a toxic platelet peptide called PF4. PF4-based peptides may be potential candidates for malaria treatment in future”, said Steven Kho.

“Given platelets show activity in the test-tube in killing many other microbes that infect humans, and low platelets are a risk for infection in other human diseases, we should consider platelets to be an important first-line defence in how humans protect themselves from microbes” said Associate Professor McMorrان.

The paper is available here <http://www.bloodjournal.org/content/early/2018/07/19/blood-2018-05-849307.long?sso-checked=true>

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