Multiple malaria vaccine offers protection to people most at risk

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A new malaria vaccine could be the first to tackle different forms of the disease and help those most vulnerable to infection, a study suggests.

The new vaccine is designed to trigger production of a range of antibodies to fight the many different types of parasite causing the disease.

Scientists created the vaccine by combining multiple versions of a key protein found in many types of malaria parasite, which is known to trigger production of antibodies upon infection.

Mixing multiple proteins from various parasite types induces antibodies against a wide range of the parasites causing the disease.

Researchers from the University of Edinburgh, who developed the vaccine, say that because malaria parasites exist in many forms, the only way to gain natural immunity against all strains is by having multiple bouts of the illness. A vaccine that overcomes this could be especially useful in children and other vulnerable groups of people.

Many previous vaccines against malaria have had limited success because they target only a limited part of the parasite population. The new vaccine has also shown to be effective in animals.

Tests in blood samples from children in endemic areas showed that the antibodies against this key protein offered improved protection against

the disease. Scientists now hope to carry out full-scale human trials.

Malaria is spread by mosquito bites and affects people and animals, mostly in sub-Saharan Africa. According to the World Health Organisation, in 2009 the disease affected 225 million people and caused an estimated 781,000 deaths, mostly among African children.

The study, published in *PLoS One*, was supported by the European Commission.

Dr David Cavanagh, of the University of Edinburgh's School of Biological Sciences, who led the study, said: "Our approach is novel because it combines multiple antibody targets from different parasite types, giving broader protection. This could prove to be a useful vaccine."

More information: Cowan GJM, Creasey AM, Dhansarnsombut K, Thomas AW, Remarque EJ, et al. (2011) A Malaria Vaccine Based on the Polymorphic Block 2 Region of MSP-1 that Elicits a Broad Serotype-Spanning Immune Response. *PLoS ONE* 6(10): e26616. doi:10.1371/journal.pone.0026616

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