



Viewpoint

Malaria Vaccine for India in the Future

Arvind Nath

Scientist 'E', National Institute of Malaria Research, Sector 8 Dwarka, New Delhi, India.

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I N F O

E-mail Id:

natha.hq@icmr.gov.in

Orcid Id:

<https://orcid.org/0000-0002-8474-5135>

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On 6th October 2021, the World Health Organization (WHO) recommended the use of the RTS, S/AS01 (RTS, S) vaccine as a preventive tool against malaria for children living in sub-Saharan Africa and in also other regions having moderate to high *P. falciparum* malaria transmission.¹ This was based on the findings of an ongoing program in Kenya, Ghana, and Malawi that has covered more than 800000 children since 2019.

The RTS, S vaccine is also known by the brand name Mosquirix. It was developed by the Malaria Vaccine Initiative of the organisation PATH and the Glaxo Smith Kline (GSK) company supported by the Bill and Melinda Gates Foundation. It is a recombinant vaccine consisting of the *P. falciparum* circumsporozoite protein (CSP) from the pre-erythrocytic stage. The CSP antigen causes the production of antibodies which can prevent the invasion of liver cells and elicit a cellular response enabling the destruction of infected hepatocytes. The CSP vaccine presented a problem in the trial stage due to poor immunogenicity. RTS, S attempted to avoid this by fusing the protein with a surface antigen from hepatitis B resulting in a more immunogenic vaccine. When tested in trials, an emulsion of oil in water and the added adjuvants of monophosphoryl A and QS21 (SBAS2), the vaccine gave protective immunity to 7 out of 8 volunteers when challenged with *P. falciparum*. Infection is prevented by inducing high antibody titres that block the parasite from infecting the liver.²

In November 2012, a Phase III trial of RTS, S found that it provided modest protection against both clinical and severe malaria in young infants.

In a bid to accommodate a larger group and guarantee sustained availability for the public, GSK applied for a marketing license with the European Medicines Agency (EMA) in July 2014. GSK treated the project as a non-profit initiative with most funding coming from the Gates Foundation.

On 24th July 2015, Mosquirix received a positive opinion from the EMA on the proposal for the vaccine to be used to vaccinate children aged 6 weeks to 17 months outside the European Union. A pilot project for vaccination was launched in April 2019 in Malawi and Ghana and in September 2019 in Kenya.

The WHO recommended this vaccine in children aged at least 5 months



in a three-dose schedule given one month apart followed by a fourth dose given 15-18 months after the third dose.³

Since Mizoram, Meghalaya, and Tripura are the states in India where there is high ongoing falciparum malaria transmission, it would be useful to introduce this vaccine in these areas, using the WHO-recommended schedule.

Conflict of Interest: None

References

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