ABSTRACT

Background

New reagents have emerged allowing researchers to assess a growing number of vaccine-associated immune parameters. Multiplex immunoassay(s) are emerging as efficient high-throughput assays in malaria serology. Currently, commercial vendors market several bead reagents for cytometric bead assays (CBA) but relative performances are not well published. We have compared two types of bead-based multiplex assays to measure relative antibody levels to malarial antigens.

Methods

Assays for the measurement of antibodies to five *Plasmodium falciparum* vaccine candidates using non-magnetic and magnetic fluorescent microspheres were compared for their performances with a Bio-Plex^{200} instrument. Mean fluorescence intensity (MFI) was determined from individuals from western Kenya and compared to known positive and negative control plasma samples.

Results

P. falciparum recombinant antigens were successfully coupled to both non-magnetic and magnetic beads in multiplex assays. MFIs between the two bead types were comparable for all antigens tested. Bead recovery was superior with magnetic beads for all antigens. MFI values of stored non-magnetic coupled beads did not differ from freshly coupled beads, though they showed higher levels of bead aggregation.

Discussion

Magnetic and non-magnetic beads performed similarly in *P. falciparum* antibody assays. Magnetic beads were more expensive, but had higher bead recovery, were more convenient to use, and provided rapid and easy protocol manipulation. Magnetic beads are a suitable alternative to non-magnetic beads in malarial antibody serology.

Keywords: Magnetic, Non-magnetic, Bio-Plex, Multiplex, Plasmodium falciparum antigens