Abstract

Approximately 198 million cases of malaria manifested worldwide in 2013, causing584,000 deaths, further solidifying malaria's status as a serious global health predicament. A vast array of immunopotentiating molecules like unmethylated CpG motif oligodeoxynucleotides (ODNs) operate in concert with cytokines in rendering hosts resistant to parasitic infections. The CpG ODNs exert potent immunostimulatory effects via nexus with dendritic cell Toll-like receptors (TLRs) like TLR 9 and by activating immune cells like B-cells and NK cells. Investigations were performed to resolve the anti-malarial effects of cytokine-CpG ODN co-inoculation in BALB/c mice infected with Plasmodium berghei ANKA strain. Two BALB/c mice groups were infected with virulent P. bergheiANKA strain parasites, followed by five consecutive days of cytokine-CpG ODN co-therapies. Six control groups with various regimen were included. Parasitaemia, and clinico-haematological outcomes accompanying the immunotherapies were quantified. Cytokine-CpG ODN interventions elicited antimalarial mechanisms involving lower peak parasitaemia, less dramatic parasitaemia trends and overall suppression of parasitaemia. Cytokine-CpG ODN co-administration also induced milder symptomatic sequelae in which lethargy, appetite distortion, convulsions and adverse clinico-haematological outcomes were repressed with ramifications in the potential of cytokine-CpG-based DNA therapy in counteracting malaria.