

Malaria merozoite surface protein antisense oligodeoxynucleotides lack antisense activity but function as polyanions to inhibit red cell invasion

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Abstract

The effects on malaria parasite growth of antisense and sense oligodeoxynucleoside phosphorothioates based on a merozoite surface protein mRNA was examined. Specific antisense effects of the oligonucleotides could not be demonstrated over three cycles of schizogony or when added as a complex with cationic liposomes. Antisense and sense oligonucleotides however, inhibit merozoite invasion of red blood cells at similar concentrations to dextran sulphate, a polyanion, as determined by microscopy and [³H]hypoxanthine incorporation into DNA. Neutralisation of the negative charge on the oligonucleotides by binding to cationic lipid liposomes, prevented the inhibition of merozoite invasion. We postulate that oligonucleotides because of their polyanionic nature interfere with the binding of merozoites to receptors on red blood cells and that polyanions may be useful in malaria therapy. © 1998 Elsevier Science Ltd. All rights reserved.

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