

D-34 Invasion inhibition of merozoite of the human malaria parasite *Plasmodium falciparum* by anti-sense oligodeoxy nucleotides

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The effects of anti-sense oligodeoxynucleoside phosphorothioates (ODN-S) on the growth of malaria parasite were investigated. The anti-sense and sense ODN-S based on analysis of the secondary structure of *Plasmodium falciparum*

dihydrofolate reductase - thymidylate synthase (DHFR-TS) and a 45 kDa merozoite surface protein (MSP-2) *mRNAs* were synthesized and their effects on *Plasmodium falciparum* growth *in vitro* were tested by microscopy and [³H] hypoxanthine incorporation.

Exposure to ODN-S at 10 iM during the period of re-invasion of red blood cells by merozoites resulted in greater than 75% inhibition of ring-stage formation of the parasite. ODN-S, mediated sequence - independent but dose dependent inhibition of parasite growth in erythrocyte culture. However the presence of ODN-S in the culture during the period of maturation of the parasite did not significantly affect parasite development. This inhibition is interpreted as being caused by the polyanionic nature of the ODN-S, since, dextran sulphate (100 µg/ml) produced similar inhibition of invasion. Specific anti-sense effects of oligonucleotides could not be demonstrated over a period of 6 days with DHFR-TS and MSP-2 anti-sense oligonucleoside phosphorothioates at 1 µM.