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## Investigation of traditional Palestinian medicinal plant *Inula viscosa* as potential anti-malarial agent

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Malaria is a life threatening parasitic disease which is prevalent mainly in developing countries; it is the main cause of global mortality and morbidity. Development and search of novel and effective anti-malarial agents to overcome chloroquine resistance have become a very important issue. Most anti-malarial drugs target the erythrocytic stage of malaria infection, where hemozoin synthesis takes place and is considered a crucial process for the parasite survival. Throughout last decades, natural products have been a significant source of chemotherapeutics especially against malaria. *Inula viscosa* is a shrub that grows around the Mediterranean basin and considered as an important Palestinian traditional medicinal herb. In this research, it was found that the Palestinian flora *Inula viscosa* alcoholic extract has a significant and promising anti-malarial effect in both *in vitro* and *in vivo* systems. The crude alcoholic extract of *Inula viscosa* has the capability to impede the formation of  $\beta$ -hematin *in vitro*; with an efficiency of about 93% when compared to the standard chloroquine which gave 94% at comparable concentrations. *In vitro* studies showed also that this crude extract inhibited the growth of Plasmodium parasites in the red blood cells at a rate of about 96.6%, with an EC50 value of 0.55ng/mL. Several secondary plant metabolites may be responsible for this anti-malarial activity; the effect also may be most probably due to the presence of high concentrations of nerolidol which has often been found at high concentrations in this plant. Nerolidol shows a stronger inhibition of hypoxanthine incorporation than quinine. Its anti-malarial effect is potentiated by other essential oils. Nerolidol is also found in several *Artemisia* species and in *Cymbopogon citratus* (lemongrass) and *Virola surinamensis*, all plants known for their anti-malarial properties.

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