

Essential oils can reduce *Eimeria tenella* invasion when evaluated by an in vitro model

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Background

- ✓ Coccidiosis disease is recognised as one of the main causes of economical losses in the poultry industry.
- ✓ The treatment is mainly based on the use of anticoccidial drugs, however the presence of drug-resistant strains of *Eimeria* parasites and the growing public concerns about drug residues in food, have stimulated the interest in finding more natural alternative compounds as a source of treatment

Aim

- ✓ To explore the anti-parasitic effect of Garlic, Oregano, Thyme and Sage essential oils on *Eimeria tenella* in vitro.

Methods

- ✓ The intracellular invasion of pre-treated parasites with essential oils was quantified by detection of *E. tenella* DNA using qPCR from cell monolayers collected at 2 and 24 hours post-infection
- ✓ Essential oils were tested at different concentrations (100, 50, 20, 5 µg/ml), and compared either with the oil solvent (DMSO) or the anticoccidial drug Robenidine

Results

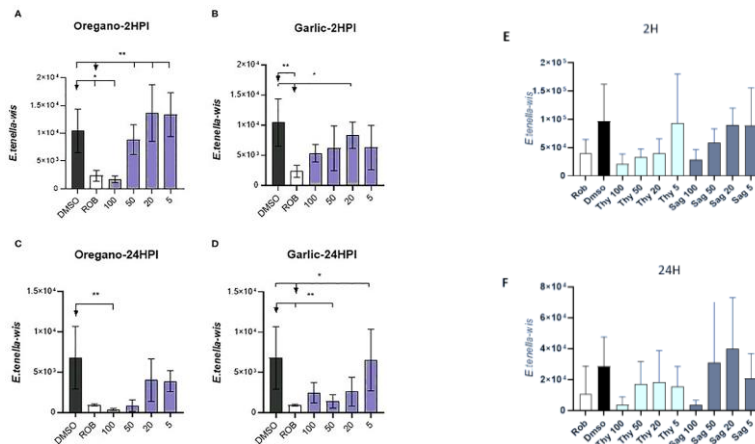


Figure- (A) 2 HPI after pre-treatment with oregano essential oil; (B) 2 HPI after treatment with garlic essential oil; (C) 24 HPI after treatment with oregano essential oil; (D) 24 HPI after treatment with garlic essential oil (E) 2 and 24 HPI (F) after treatment with Thyme and Sage essential oils.

- ✓ A significant reduction of intracellular sporozoites was found using high doses of Oregano and Garlic essential oils.
- ✓ A profile of inhibition was also observed using Thyme and Sage oils, however the inhibition did not achieve statistical significance due to a higher variability
- ✓ Garlic and Oregano oils have also been tested *in vivo* confirming their potential as biocomponents to prevent coccidiosis disease.

Conclusions

- ✓ These results show promising effects of natural biocomponents on treatment of coccidiosis.
- ✓ Further experiments need to be explored by evaluating combinations of the optimal inhibitory doses of the different essential oils.