

Background

Ascaris suum is present in traditionally managed herds and on industrialized farms, especially in old fatteners and sows. Increasing resistance against anthelmintics redirected the research towards alternative, traditional therapies, medicinal plants included.



Fig. 1. Picture showing a free-range farm.

Objectives

This study comparatively evaluated the *in vitro* effects of *Allium sativum*, *Artemisia absinthium* L., *Cucurbita pepo*, *Coriandrum sativum*, *Satureja hortensis* L. and *Calendula officinalis* on inhibition of *A. suum* egg hatching and larval development.

Materials and methods

A. suum eggs were collected from randomly sampled of traditionally maintained swine faeces. In 3 ml cell culture plates, the egg suspension (ES, 8x10³/ml) was divided in two control (C) (1C - 1ml ES + 1 ml distilled water, 2C- five plates of 1ml ES + 1ml ethanol of 70%, 35%, 17.5%, 8.75%, and 4.375%, respectively) and six experimental groups. The experimental (E, 1-6) groups included ES + each alcoholic plant extract (10%, 5%, 2.5%, 1.25%, 0.625%). Both C and E were performed in quintuplicate. All groups were incubated at 27 °C for a total of 21 days, *A. suum* eggs being examined after 2, 14 (L1) and 21 (L2/L3) days.

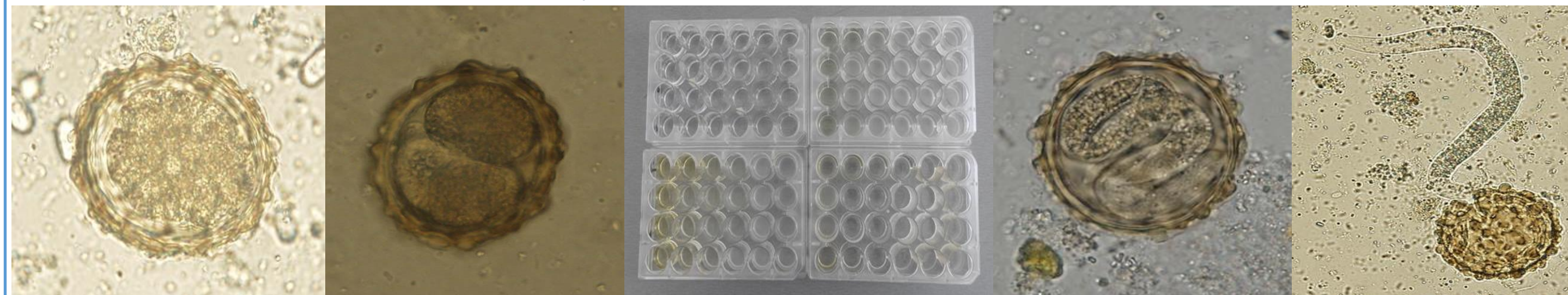


Fig. 2 All the materials necessary for the copro-parasitological methods

Results

The efficacy of all tested plants, when compared to the control groups increased with concentration. Anti-embryogenic effects on the *A. suum* eggs were expressed by all plants, with more pronounced influence of the *A. sativum*, *A. absinthium*, *C. pepo* and *S. hortensis* L extracts at all tested concentrations.

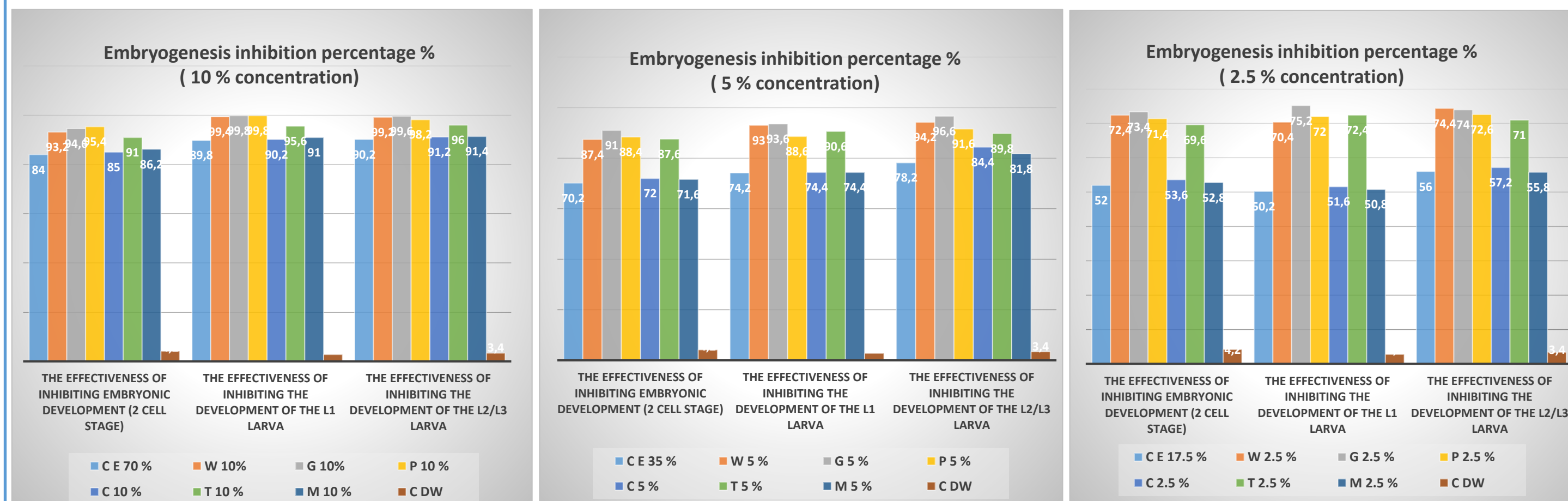


Fig. 3. Percentage of embryogenesis inhibition at the concentration of 10, 5, 2.5 % ; C E= control group with ethanol, W= *A. absinthium* group, G=A. *sativum* group, P =C. *pepo* group, C=C. *sativum* group, T=S. *hortensis* group, M=C. *officinalis* group, C DW= control group with distilled water.

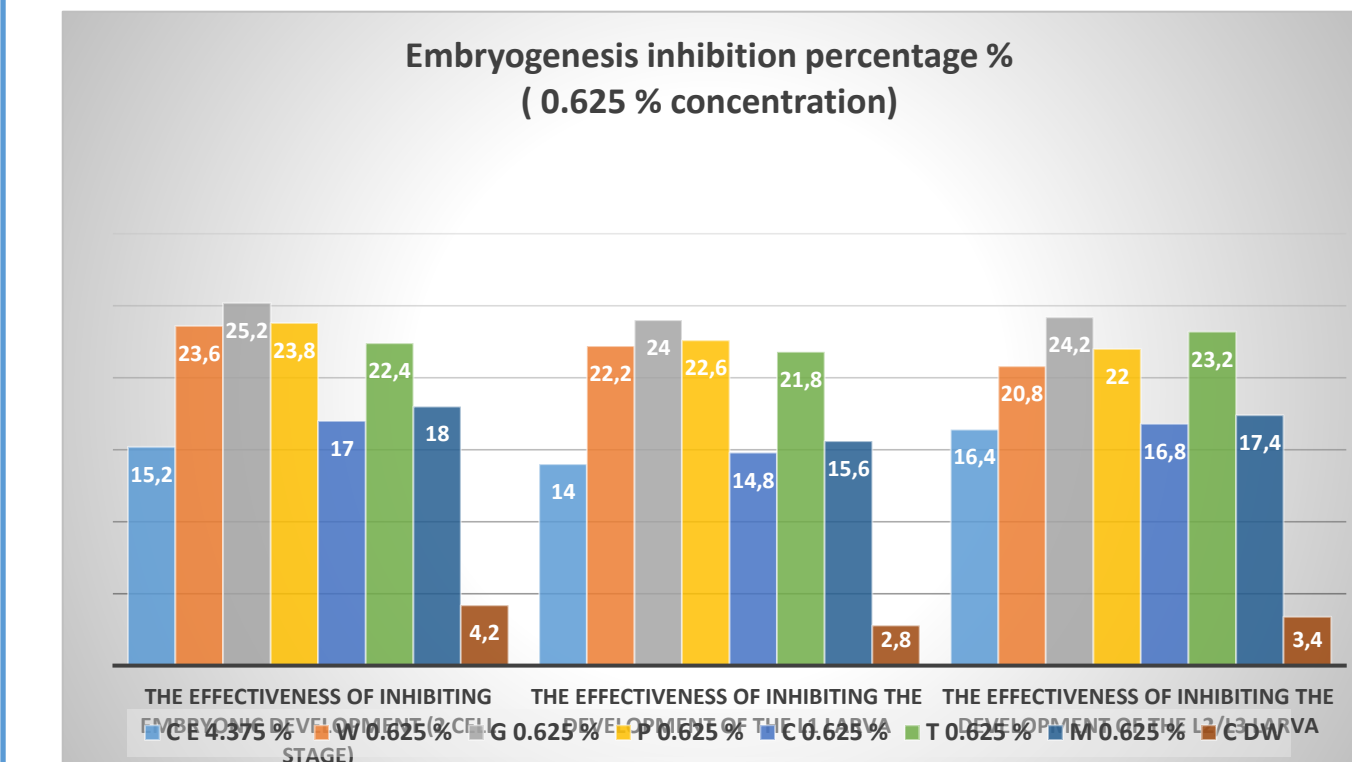
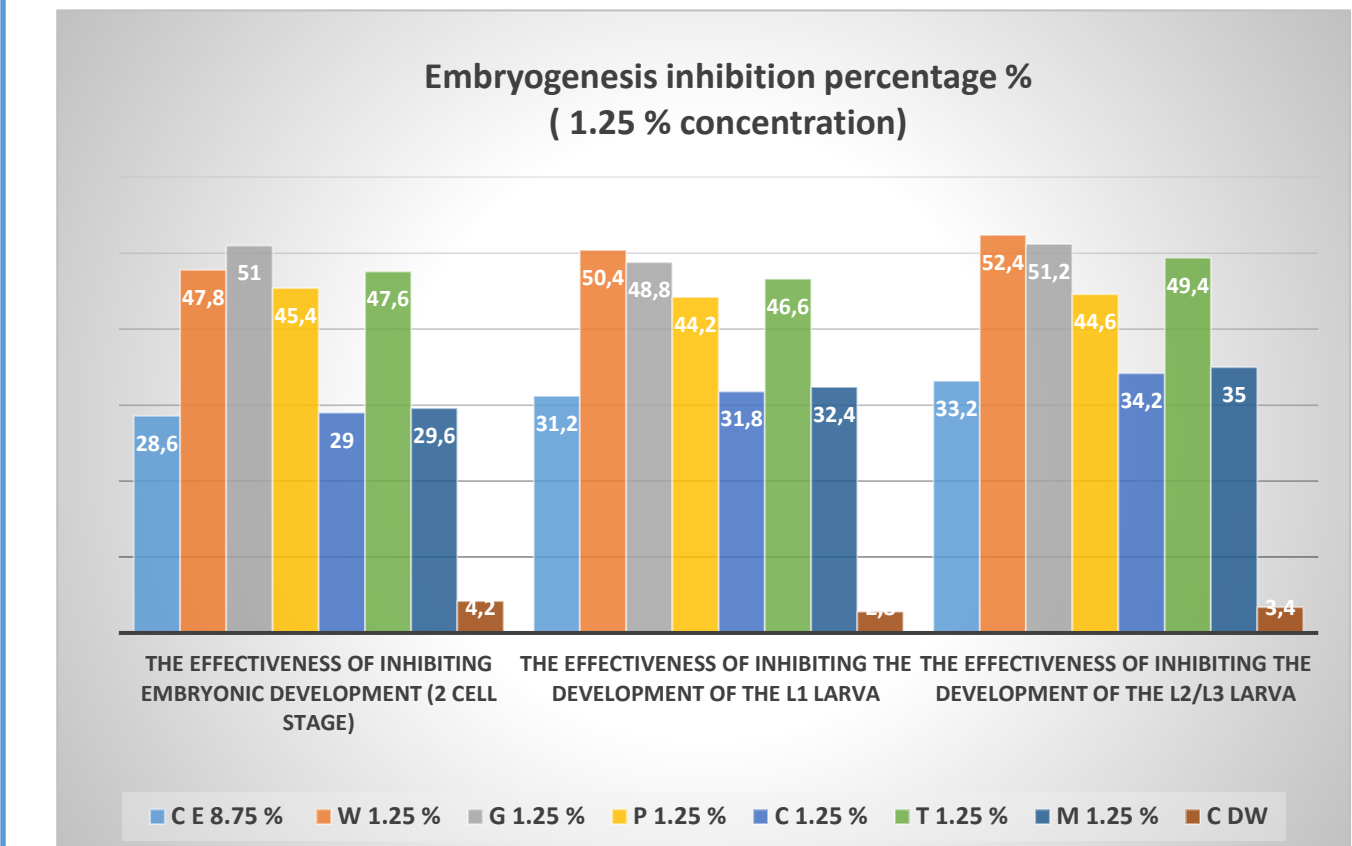


Fig. 4 . Percentage of embryogenesis inhibition at the concentration of 1.25, 0.625 % ; C E= control group with ethanol, W= *A. absinthium* group, G=A. *sativum* group, P =C. *pepo* group, C=C. *sativum* group, T=S. *hortensis* group, M=C. *officinalis* group, C DW= control group with distilled water.

Conclusions

A. sativum and *A. absinthium* extracts showed the strongest antihelmintic activity; still, in-depth phytochemical studies are required to identify the compounds responsible for the antihelmintic properties of these species. To our best knowledge, this is one of the few ethnopharmacological reports on the antihelmintic activity of medicinal plants traditionally used for the treatment of *A. suum* infection in Romania.