Investigating anti-parasitic effects of plant secondary metabolites: effects on swine nematodes

Andrew Williams, Miguel Peña, Christos Fryganas*, Honorata Ropiak*, Aina Ramsay*, Irene Mueller-Harvey*, Stig Milan Thamsborg

IVS, KU-SUND, Denmark
*University of Reading, UK

EAAP 26-4-14
Our research group:

- Focuses on novel strategies to control parasite infections in livestock
- Strong emphasis on pig parasites

Prevalence of *Ascaris suum* in different groups of pigs (false positives are not taken into account)

![Prevalence Graph](image)
Plant secondary metabolites

- Bioactive compounds – wide range of effects on host metabolism:
  - Antioxidant
  - Immuno-modulatory
  - Promote wound healing

- Direct antimicrobial effects (bacteria, protozoa)

- Anthelmintics...
Many plants contain secondary compounds...

Objective

Extract with acetone and water
↓
Size fractionation into two fractions
↓
In vitro assays to determine direct effects on worms

Extract with methanol
↓
Purify on C18 column
Results

A. suum L3 16 hours

% alive

Concentration (µg/mL)

Spadona
Puna

36 hours

% alive

Concentration (µg/mL)

Spadona
Puna
Results

*O. dentatum*

![Motility index score over time](image)

- Spadona
- Puna

![Additional graphs](image)
Condensed tannins from cocoa beans

Inhibit migration of *Ascaris suum* L3 in a dose dependent manner
Condensed tannins from cocoa beans
Results
Conclusions so far

• Chicory and tannin-containing materials show promise as natural anti-parasitic feed diets and/or feed additives

• Further *in vivo* and on-farm work is necessary to determine efficacy and cost-benefit analyses
Thank you