



Impact of specific formulations on anthelmintic resistance development

13th June 2016



Topics for consideration

- Pharmaceutical form/route of administration
- Formulations with extended duration of activity
- Availability of effective anthelmintics for minor species.



Pharm. form/route of admin. (1)

- Injection
- Oral
 - Drench
 - Paste/Tablet
 - Oral powder/Premix
 - Powder/solution for use in drinking water
 - Sustained release bolus
- Pour-on



Pharm. form/route of admin. (2)

- Treatments for administration in food/drinking water
 - Used for intensively farmed species
 - Group medication
 - Variability in intake
 - Concern: risk of under-dosing



Pharm. form/route of admin. (3)

- Pour-on
 - Used in animals housed or at pasture
 - Typically, reduced bioavailability/increased dose relative to injectable formulations
 - Between-animal variability in absorption
 - Slow release from skin
 - Cross-contamination (licking, cattle)



Pharm. form/route of admin. (4)

- Pour-on - concerns:
 - risk of under-dosing
 - 'tailing off', with parasite exposure to sub-therapeutic doses)
 - parasite exposure to sub-therapeutic doses in untreated animals
- !! (potential for residues in untreated animals; therefore, SPC for some products includes a recommendation to treat all in a group)



Prolonged release formulations (1)

- Used in animals at pasture
- Purpose: to extend the duration of activity
 - Increase the 'standard' therapeutic dose
 - Depot (slow release) injections
 - Sustained-release bolus



Prolonged release formulations (1)

- Concerns
 - prolonged or repeated parasite exposure (?implications for *refugia*)
 - ‘tailing off’, with parasite exposure to sub-therapeutic doses)

[*Falzon et al., 2014*]



Discussion points:

- Are all concerns raised valid?
- For 'valid' concerns, what recommendations can/should be made in relation to proper/prudent use?



Availability of effective anthelmintics for minor species

- Availability is an issue for small ruminants: milk producing sheep and goats
- Resistance widespread
- Silvestre et al. (2007): the dose for treatment of goats with topical eprinomectin should be higher than (twice) the dose administered to cattle



Discussion points:

- Recommendations?