

## DO NOT

- Do not use one drug class continuously for several seasons.
- Do not mix anthelmintics with other products unless the anthelmintic is indicated on the labels/leaflet for use in this way.
- Do not treat unnecessarily.
- Do not treat animals and then release them directly onto "safe" pasture (i.e. pasture that is clear of worms). Seek specialist advice in this area from RUMA, SCOPS or COWS.

## What is the VMD doing to try to slow the emergence of resistance to anthelmintics?

- 1) In July 2007 the Committee for Veterinary Medicinal Products (CVMP) adopted the "Guideline on the Summary of Product Characteristics for Anthelmintics" following EU discussion on the increasing problem of resistance to anthelmintics in sheep, goats, horses and cattle. This guideline recommends adding standard warnings in the Summary of Product Characteristics (SPCs) of anthelmintics for use in sheep, goats, horses and cattle. Therefore, the SPCs and product literature for anthelmintics for use in sheep, goats, horses and cattle now include the agreed phrases:

Care should be taken to avoid the following practices because they increase the risk of development of resistance and could ultimately result in ineffective therapy.

- Too frequent and repeated use of anthelmintics from the same class, over an extended period of time.
- Under dosing; this may be due to underestimation of body weight, misadministration of the product, or lack of calibration of the dosing device (if any).

Suspected clinical cases of resistance to anthelmintics should be further investigated using appropriate tests (e.g. Faecal Egg Count Reduction Test). Where the results of the test(s) strongly suggest resistance to a particular anthelmintic, an anthelmintic belonging to another pharmacological class and having a different mode of action should be used.

To ensure administration of a correct dose, bodyweight should be determined as accurately as possible; accuracy of the dosing device should be checked.

If animals are to be treated collectively rather than individually, they should be grouped according to their bodyweight and dosed accordingly, in order to avoid under or over dosing.

- 2) If there is documented resistance in Europe to the active ingredient, or to the class of anthelmintic in target parasites, an additional warning describing this resistance is also added to the product literature.
- 3) The VMD welcomes the training by Animal Medicines Training Regulatory Authority (AMTRA) of both student SQPs and qualified SQPs, in the area of anthelmintic treatment with special emphasis on the issue of emerging resistance and encourages its continuation and development.
- 4) The VMD monitors the numbers of "Suspected Lack of Efficacy" reports as part of the pharmacovigilance surveillance which we perform. It is vitally important that all such events are reported to us, in order that we know the real picture of resistance in the UK and can advise manufacturers and users of anthelmintics accordingly.
- 5) The VMD works closely with organisations such as SCOPS (Sustainable Control of Parasites in Sheep), NOAH (National Office of Animal Health) and RUMA (Responsible Use of Medicines in Agriculture Alliance) and the BVA (British Veterinary Association) to promote the optimal use of veterinary medicines.

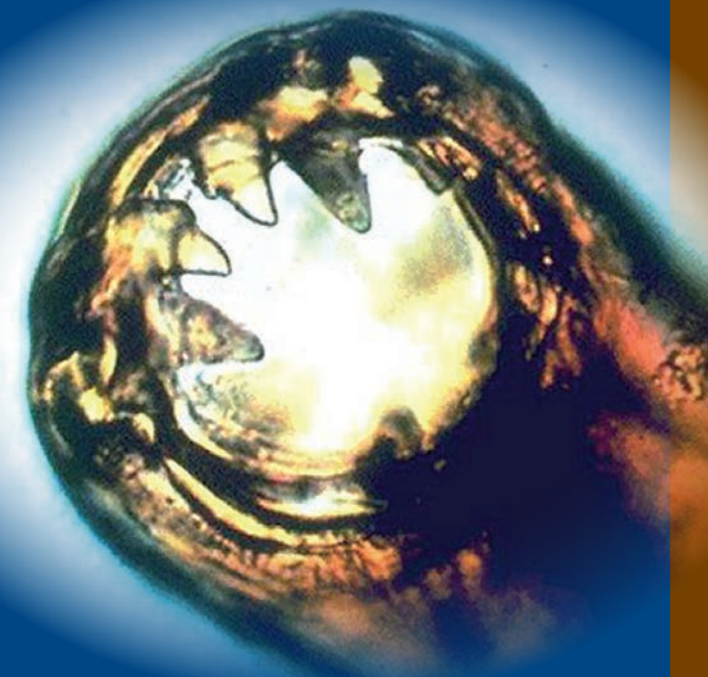
## Further information

You can also visit the VMD website for product information, guidance documents and other information leaflets: [www.vmd.defra.gov.uk](http://www.vmd.defra.gov.uk), or phone the VMD on 01932 336911 for any additional assistance about veterinary medicines.

You can also e-mail us at: [postmaster@vmd.defra.gsi.gov.uk](mailto:postmaster@vmd.defra.gsi.gov.uk)



ASSURING THE SAFETY, QUALITY & EFFICACY OF VETERINARY MEDICINES



# Anthelmintics



Department  
for Environment  
Food & Rural Affairs

The Veterinary Medicines Directorate is an Executive Agency of the Department for Environment, Food & Rural Affairs

# Anthelmintic Resistance and the Responsible Use of Anthelmintics

## What is anthelmintic resistance?

An anthelmintic (also known as de-wormer) is a medicine intended to paralyse or kill parasitic worms in their mammalian host. Resistance is the ability of the worm to survive a particular dose of anthelmintic which would normally be effective; this is a heritable trait.

## What is the current status of anthelmintic resistance in the UK?

Anthelmintic resistance has been identified in worm populations in UK ruminants and horses for decades and there are increasing trends for the presence of resistance to many of the commonly used anthelmintics.

The purpose of this leaflet is to provide basic advice on anthelmintic use for all types of animals; however, more specialist advice can be sought from the individual species groups' representatives (for example, Responsible Use of Medicines in Agriculture Alliance (RUMA) at [www.ruma.org.uk](http://www.ruma.org.uk), Sustainable Control of Parasites in Sheep (SCOPS) at [www.defra.gov.uk](http://www.defra.gov.uk) or Control of Worms Sustainably (COWs) at [www.eblex.org.uk/documents/content/research/cows\\_manual\\_2010\\_plus.pdf](http://www.eblex.org.uk/documents/content/research/cows_manual_2010_plus.pdf)).

Currently, anthelmintic resistance largely affects roundworms that infect food-producing animals (sheep, goats, and to a lesser extent, cattle) and horses. In some areas, multi-drug resistance is such that the only options remaining to farmers are to remove current stock and restock later or to diversify into other business areas. The flatworm, *Fasciola hepatica* (liver fluke) is also becoming more difficult to treat. This is particularly concerning as it is suggested that changes in the climate in the UK have increased the incidence of clinical fascioliasis. It remains unclear if the difficulty in treating these infections is due to true anthelmintic resistance or from reduced liver function in affected animals due to chronic damage caused by the fluke.

## Why has this resistance occurred?

There are many causes, some of these include:

- An historically heavy reliance on repeated anthelmintic use on many farms and equine yards. Continual use over time results in a reduced proportion of worms in a given population that have not been exposed to the anthelmintics.
- A limited awareness of the distinction of classes of anthelmintics which have different modes of action in the worms, and the importance of using best practice control strategies that reduce continual use of the same class.
- Inaccurate, or no weighing of animals leading to under dosing.
- Farmers seeking less advice from vets or SQP's due to increases in production costs.
- Mis-diagnosis of symptoms leading to overuse and/or inappropriate use of anthelmintics where they are not indicated.

## How can the development of resistance be slowed in the field?

Globally, we remain highly dependent on anthelmintics for worm control. There is now a wider acceptance of alternative management practices designed to reduce the frequency of anthelmintic treatments, and research is continuing into control solutions that do not entirely rely on chemical medicines; for example, targeted treatment strategies based on production parameters, resistant host selection and worm vaccines. However, the reality is that, alone, these methods are insufficient to control worms, at least for the mid-term.

The following strategies may be of use in helping preserve the effectiveness of the currently available de-worming products.

### DO – Develop Good Worming Strategy

- Create health plans for individual farms/stables and work closely with these clients to enable correct implementation of the plan and monitoring of outcomes. Vets or specialist advisers should suggest how de-worming plans can be targeted and minimised. As a starting point, discuss de-worming patterns and avoid de-worming to a set pattern every year. Faecal worm egg count testing should be considered. Monitoring worm egg counts in dung samples helps determine optimal treatment regimens. Faecal Egg Count (FEC) monitoring is a vital component of determining which animals to treat. Regular use of FECs means that less anthelmintic is used and therefore the selection pressure for resistant worms is reduced.

- Use the right product for the target parasite.
- Test which products are working effectively by taking faecal samples before and after treatment. Vets should be able to offer advice to clients on how this can be done and many will be able to provide this service or recommend an appropriate diagnostic laboratory. Treatment strategies can then be devised to take account of the current resistance status, with the aim of maintaining the effectiveness of the anthelmintic classes that are still working.
- If you find that an anthelmintic is not working as well as it should, this is known as a "Suspected Lack of Efficacy" situation and you should:
  - i) Report the event to the VMD's Suspected Adverse Reaction Surveillance Scheme (SARSS) team using a 'yellow' form (MLA252A) or online via the VMD website: <http://www.vmd.defra.gov.uk/adversereactionreporting/>
  - ii) Arrange investigations to determine if this is a resistance problem or a different cause of the lack of efficacy. The manufacturer of the anthelmintic used may be able to help with this investigation.
- Control burdens using grazing management methods. See the above advisory groups for more information. Try to implement integrated control strategies to reduce the worm population on pasture and hence the requirement for frequent treatment.
- The introduction of resistant worms via newly purchased stock is a major risk. Treat all newly purchased animals on arrival with anthelmintics, from two different classes (choose two classes with the lowest known levels of resistance), quarantine the animals for 72 hours after treatment and then, if possible, release them on to 'dirty' pasture (i.e. grazing likely to be contaminated with worms).

### DO – Good Worming Practice

- Ensure that the correct dose rates are always used based on the most accurate weight estimations possible. Always follow the manufacturer's instructions and make sure that dosing guns dispense the correct volumes of product.
- Check each animal's bodyweight and dose according to the largest animal within the group being treated. Follow the manufacturer's instructions concerning storage and handling of the anthelmintic.
- In ruminants, ensure administration is over the back of the tongue, rather than into the mouth to ensure that the drug does not bypass the rumen.