Side and Cross Resistance

Side resistance

Is when resistance to one drug in a class can confer resistance to others in the same class. For example, resistance to fenbendazole leading to resistance to albendazole, another active in the benzimidazole class.

The net result is that when resistance develops to one anthelmintic product in a class of anthelmintics (e.g. Benzimidazoles, 1-BZ) all others in that class will also be affected because they share the same mode of action. Therefore, worms that are resistant to, for example oxfendazole, are also resistant to other 1-BZ anthelmintics, such as fenbendazole, ricobendazole and albendazole. Similarly, worms that are resistant to ivermectin will also exhibit side-resistance to doramectin and moxidectin. However, in the early stages of moxidectin resistance this will be manifest as a reduction in persistency of the product, shortening the period before egg laying resumes post-treatment.

Note: moxidectin only has a label claim for persistency against some specified worm species, so it is important to consider the possibility of re-infection with these other worm species if egg counts rebound quickly post MOX administration.

Cross resistance

Is defined as acquired resistance to an anthelmintic which is not as a result of direct exposure to that class, but by exposure to another. For example, where resistance to ivermectin also results in resistance to albendazole. It is thought cross resistance is extremely rare, indeed its existence is a subject of scientific debate