



Known or Potential Problem Dugs

More than twenty drugs are known, suspected, or have the potential of causing problems with dogs carrying the mutant form of the Multi-drug Resistance Gene, *a list which is still being extended*. These drugs, listed below in alphabetical order, used in the treatment of a wide spectrum of ailments including cancer, heart disease and pain relief.

Acepromazine	Butorphanol	Chinidin	Cyclosporin
Dexamethasone	Digoxin	Domperidone	Doxorubicin
Ebastine	Erythromycin	Etoposide	Grepafloracin
Hydrocortisone	Ivermectin	Loperamide	Mitoxantrone
Morphine	Moxidectin	Ondansetron	Paclitaxe
Quinidine	Rifampicin	Selamectin	Sparfloxacin
Tacrolimus	Vinblastine	Vincristine	

Check all over-the-counter medications do not contain any of the above, and in the event of your collie ever being prescribed any of the above drugs we advise discussing these notes with your Veterinary Surgeon.

More Information

A great deal of material can be found on the Internet if you search for "*Ivermectin Toxicity in Collies*" and below you will find links to some of the more important sources of scientific information:

- www.pnas.org/cgi/reprint/o402374101v1 – Dr Katrina Mealey and Dr Mark Neff's Drug Sensitivity research paper in PDF format.
- <http://www.vetmed.wsu.edu/depts-VCPL/index.asp#Breeds> – for the latest research updates on drug sensitivity.
- http://www.healthgene.com/canine/arch_bull_0905.asp – Brief explanation of Ivermectin Toxicity.
- <http://www.healthgene.com/canine/C142.asp> – Explanation of Ivermectin Toxicity with details on DNA Testing in USA.
- <http://www.vetmed.wsu.edu/depts-VCPL/test.asp> – Drug Sensitivity DNA test explained.
- <http://www.gencouns.nl/engmdr1-1.html> – DNA Testing for Drug Sensitivity in Europe, with additional date on Drug Sensitivity discovered by European Veterinary Scientists.
- <http://users.ahsc.arizona.edu/davis/bbb.htm> – technical information on the Blood-Brain Barrier.
- www.collie-association.co.uk/health-issues.html – up to date information on known and suspected problem drugs for the none scientific.

THE
COLLIE
ASSOCIATION
Established 1934



DRUG SENSITIVITY IN THE WIDER COLLIE FAMILY THE FACTS

These drugs 'could' KILL your Collie
Please read this information sheet carefully, and retain for
future reference

it may save your Collie's life.



1980/82 – Ivermectin Licensed for Veterinary Use

Veterinary surgeons were quick to discover, soon after its introduction as a veterinary medicine in the early 1980s, that Ivermectin was a particularly effective treatment for a variety of canine parasitic infections, and despite the fact that the drug was **only licensed for cattle, pigs and horses** it quickly became the drug of choice with many practising vets when treating stubborn canine cases of parasitic infections.

1984 – First Documented and Confirmed Case of Ivermectin Poisoning

Almost as quickly Collie owners were reporting problems with dogs treated with Ivermectin, and amongst the earliest was an Italian breeder whose vet administered Ivermectin as a wide spectrum anti-parasitic drug to her kennel of Collies, all of which quickly became very poorly. Despite constant veterinary attention and the breeder's ability to invoke the assistance of *Dr Sharon Lynn Vanderlip*, a Doctor of Veterinary Medicine and then Head of Veterinary Medicine and Surgery at the University of California. Four of her valuable kennel died as a result.

1984 – Warning About Possible Adverse Effect of Using Ivermectin

Shortly after, and possibly as a result of this case Merck Sharp and Dohme Ltd [MSD] issued the following advice to the veterinary profession '*Ivermectin is known to have an adverse effect on certain breeds of dog*' by way of three letters written to the editor of '*The Veterinary Record*'. That many veterinary surgeons failed to heed the message conveyed in this way is hardly surprising and vets generally continued to use the drug, although it was still not licensed for use in dogs.

1988 – British Breeder Loses Two of Four Collies Treated with Ivermectin

After experiencing difficulties with an excessive worm burden in otherwise healthy puppies in 1988 a British Collie breeder accepted the advice of her vet allowing the use of a preparation he assured her he had used successfully for more than a year without any adverse effects. All four bitches, treated in this way, became lethargic which was quickly followed by paralysis, two eventually lapsing into a coma from which they did not recover.

1989 – MSD Print Warning About Possible Side Effects of Ivermectin on Packaging

As a result of this breeder's experiences, and after consultation between her, her vet and the drug company it was agreed that the drug company would, in future, include a warning about the possible side effects in selected breeds on their packaging, however MSD's promised articles advising both breeders and veterinarians about the dangers never materialise, although '*The Veterinary Record*' did republish their original cautionary letter.



Mid 90s – Other Breeds and Drugs Implicated in Drug Sensitivity Problems

By the mid 90s other breeds were reporting sensitivity problems, in addition other drugs, and this time drugs licensed for domestic animals, were being implicated in a similar way to Ivermectin. This being the case with an American exhibitor whose Collie was diagnosed with Lymphosarcoma cancer. Prescribed chemotherapy he developed poison like symptoms after a single treatment, and this using a smaller dose than usually prescribed, from which he did not recover, post mortem results proving it was the treatment and not the cancer which killed him.

1997 – Research into Drug Sensitivity Conducted in America & Germany

By the late 90s a team of veterinary scientists, headed by *Dr Katrina Mealey* and *Dr Mark Neff*, had instigated a research programme to isolate the cause of this problem. Early observations showed that affected dogs had an elevated concentration of Ivermectin in the central nervous system, which lead the research team to believe that this neurotoxicity was caused by some defect in the blood-brain barrier mechanism. The DNA testing of swabs, acquired from a wide selection of apparently unrelated breeds, mostly pastoral and hounds, from several countries revealed a pre-existing mutation of the **Multi-drug Resistance Gene MDR-1** in the wider Collie family, which confirmed what many Collie enthusiasts had long suspected. Statistical analysis of the initial test results suggest more than 50% of Collies, are affected by this problem and are therefore susceptible to adverse reactions to a variety of drugs.

2003 – Accidental Ivermectin Poisoning

More recently it has been discovered that susceptible dogs do not need to be given a drug containing Ivermectin in order to be affected by it, as the owners of one young show hopeful discovered to their cost. Exercised in a field where horses were allowed to graze, this young collie suddenly became very poorly, but as he had not been given any medication before showing symptoms of ill-health it was some time before Ivermectin Intolerance was suspected. It is known, within the veterinary profession, that cattle and horses excrete a large amount of the drug in their faeces after worming, and this was apparently means by which this collie acquired a lethal dose of Ivermectin after ingesting dung passed by horses that had recently been wormed with an Ivermectin based preparation.

2004 – Drug Sensitivity Test Introduced

A DNA test to discover which animals are affected by this mutation of the Multi-drug Resistance Gene which causes Sensitivity to a wide variety of drugs has been introduced in both America and Europe, thereby assisting veterinarians in their choice of treatment options, this of greatest assistance in deciding the treatment of more serious conditions such as cancer.