

The Technical Manual



advocate[®]



Bayer HealthCare
Animal Health

The Technical Manual



Version 3.0 - 2005

Contents



Introduction 7

1 General Pharmacology

Imidacloprid

| | |
|---------------------------------------|----|
| ■ History | 8 |
| ■ Chemical Properties of Imidacloprid | 9 |
| ■ Mode of Action | 9 |
| ■ Spectrum of Activity | 11 |
| ■ Toxicology | 11 |

Moxidectin

| | |
|-------------------------------------|----|
| ■ History | 12 |
| ■ Chemical Properties of Moxidectin | 13 |
| ■ Mode of Action | 13 |
| ■ Spectrum of Activity | 14 |
| ■ Toxicology | 14 |

2 Pharmacokinetics

Imidacloprid

| | |
|-----------|----|
| ■ Topical | 16 |
|-----------|----|

Moxidectin

| | |
|------------------------------|----|
| ■ Topical | 17 |
| ■ Dose Determination Studies | 18 |

Advocate

| | |
|-----------------------------|----|
| ■ Dose Confirmation Studies | 20 |
|-----------------------------|----|

3 Safety Studies

Imidacloprid

| | |
|---------------------------------------|----|
| ■ Puppies and Kittens | 22 |
| ■ Adult Dogs and Cats | 23 |
| ■ Reproductive & Developmental Safety | 24 |
| ■ Pregnancy and Lactation | 24 |

Moxidectin

| | |
|-----------------------|----|
| ■ Acute Safety | 24 |
| ■ Chronic Safety | 25 |
| ■ Reproductive Safety | 25 |

Advocate

| | |
|--|----|
| ■ Treatment of Puppies and Kittens | 25 |
| ■ Safety in Ivermectin-sensitive Breeds | 25 |
| ■ Safety in Dogs with Patent Heartworm Infection | 26 |
| ■ General Dermal Safety | 26 |
| ■ Oral Ingestion Tolerance | 27 |
| ■ General Safety | 27 |

4 Clinical Applications of Advocate

| | |
|-----------------------------|----|
| ■ Indications for Use | 28 |
| ■ Formulation | 29 |
| ■ Dosage | 29 |
| ■ Treatment Recommendations | 30 |
| ■ Water Exposure | 30 |

5 Target Parasites

Ectoparasites

| | |
|-----------------------|----|
| ■ General Information | 32 |
|-----------------------|----|

Flea (Ctenocephalides spp.)

| | |
|--|----|
| ■ The Parasite | 32 |
| ■ Life Cycle | 33 |
| ■ Pathogenesis and Clinical Appearance | 34 |
| ■ Zoonotic Significance | 36 |
| ■ Diagnosis | 36 |
| ■ Clinical Efficacy of Advocate | 36 |

Mites in Dogs and Cats

- General Information 38

Mange Mites (*Sarcoptes scabiei* var. *canis*) in dogs

NEW

- The parasite 39
- Life Cycle 39
- Pathogenesis and Clinical Appearance 40
- Zoonotic Significance 40
- Diagnosis 40
- Clinical Efficacy of Advocate 41

Ear Mites (*Otodectes cynotis*)

NEW

- The Parasite 44
- Life Cycle 44
- Pathogenesis and Clinical Appearance 45
- Zoonotic Significance 46
- Diagnosis 46
- Clinical Efficacy of Advocate 46

Demodex Mites (*Demodex canis*)

NEW

- The Parasite 48
- Life Cycle 48
- Pathogenesis and Clinical Appearance 49
- Zoonotic Significance 49
- Diagnosis 49
- Clinical Efficacy of Advocate 50

Lice in Dogs and Cats

Sucking Lice (*Linognathus setosus*)

Biting Lice (*Trichodectes canis*)

- The Parasite 53
- Life Cycle 54
- Pathogenesis and Clinical Appearance 54
- Zoonotic Significance 54
- Diagnosis 55
- Clinical Efficacy of Advocate 55

6

Heartworm

- General information 56
- The Parasite 57
- Development of the Parasite 58

Canine Heartworm (*Dirofilaria immitis*)

- Pathogenesis and Clinical Appearance 59
- Diagnosis 60
- Clinical Efficacy of Advocate 60

Feline Heartworm (*Dirofilaria immitis*)

- Pathogenesis and Clinical Appearance 62
- Diagnosis 63
- Clinical Efficacy of Advocate 63

7

Gastro-Intestinal Nematodes

- General Information 64

Roundworms (*Ascarids*)

- The Parasite 64
- Life Cycle 65
- Pathogenesis and Clinical Appearance 67
- Zoonotic Significance 67
- Diagnosis 67
- Clinical Efficacy of Advocate Against Adults 68
- Clinical Efficacy of Advocate Against Immature Worms 70

Hookworm

- The Parasite 71
- Life Cycle 71
- Pathogenesis and Clinical Appearance 72
- Zoonotic Significance 73
- Diagnosis 74
- Clinical Efficacy of Advocate Against Adults 74
- Clinical Efficacy of Advocate Against Immature Worms 76

Whipworm

- The Parasite 77
- Life Cycle 77
- Pathogenesis and Clinical Appearance 77
- Zoonotic Significance 78
- Diagnosis 78
- Clinical Efficacy of Advocate 78

Advocate Package Insert 79

Advantage Package Insert



Introduction

The treatment and/or prevention of parasitic diseases in Companion Animals has evolved to become an integral component of veterinary practice and pet ownership. An increasing awareness by pet owners and the development of highly effective and sophisticated products have resulted in an emphasis on preventative medicine and a shift in the focus of the Veterinary Profession. In addition, the zoonotic aspect of these parasites is just as important to the pet owner as the direct effects on the animals' health. Practitioners and clinic staff now play an increasingly important role as providers of quality advice and services to pet owners who, in turn, rely on these professionals for accurate and up to date information.

Until relatively recently the prevention of parasitic infestations in pets has

been achieved with products that have been specific in their application – one product, one parasite. With the advent of newer active ingredients and the novel combinations of existing compounds the concept of multiple parasite control with a single product has emerged.

Within Bayer HealthCare, Animal Health Division, the lead was taken with Advantix® (K9 Advantix, trademark in the USA), a combination of imidacloprid and permethrin, a product that combines the excellent flea efficacy of imidacloprid with the repellent and acaricidal efficacy of a pyrethroid, permethrin. In order to provide another preventative product for the increasing needs of clients and their pets, further developmental work has significantly expanded the spectrum of activity of the latest Bayer product – a combination of imidacloprid and moxidectin known as Advocate® (AdvantageMulti trademark in Canada and New Zealand, AdvantageGold in Brazil).

Veterinarians can be sure that when dogs and cats are treated with Advocate every month, heartworm prevention, flea treatment and control, gastro-intestinal worm control as well as sarcoptic mange, ear mites and even demodex mite treatment is optimal.

This Technical Manual outlines details of the parasites and the active ingredients and summarises the extensive research results available on the efficacy of Advocate.

