

Date of Approval:

**FREEDOM OF INFORMATION
SUMMARY**

SUPPLEMENTAL NEW ANIMAL DRUG APPLICATION

NADA 141-220

**CYDECTIN (moxidectin) Injectable Solution for Beef and Nonlactating
Dairy Cattle**

“for the treatment and control of three additional parasite species and additional life stages for
three previously approved parasites of cattle”

Sponsored by:
Fort Dodge Animal Health
Division of Wyeth

141-220

FOIS

Table of Contents

1. GENERAL INFORMATION..... Page 1

2. EFFECTIVENESS..... Page 3

 Substantial Evidence for Endoparasite Indications..... Page 3

3. TARGET ANIMAL SAFETY..... Page 12

4. HUMAN FOOD SAFETY Page 12

5. AGENCY CONCLUSIONS..... Page 12

6. ATTACHMENTS Page 13

1. GENERAL INFORMATION

- A. File Number: NADA 141-220
- B. Sponsor: Fort Dodge Animal Health
Division of Wyeth
800 Fifth St. NW.
Fort Dodge, IA 50501

Drug Labeler Code: 000856
- C. Established Name: Moxidectin
- D. Proprietary Name: CYDECTIN Injectable Solution for Beef and Nonlactating Dairy Cattle
- E. Dosage Form: Sterile injectable solution
- F. How Supplied: 200 mL and 500 mL polyethylene bottles
- G. How Dispensed: OTC
- H. Amount of Active Ingredients: 10 mg moxidectin per mL
- I. Route of Administration: Subcutaneous injection
- J. Species/Class: Beef and Nonlactating Dairy Cattle
- K. Recommended Dosage: 1 mL solution for each 110 pound (50 kg) body weight to provide 0.2 mg moxidectin/2.2 pound (1 kg) body weight
- L. Pharmacological Category: Antiparasitic

M. Indications: CYDECTIN Injectable when administered at the recommended dose level of 0.2 mg/2.2 lb (0.2 mg/kg) body weight is effective in the treatment and control of the following internal and external parasites of cattle:

Gastrointestinal Roundworms

Ostertagia ostertagi – Adults and inhibited L₄
Haemonchus placei Adults
Trichostrongylus axei – Adults
Trichostrongylus colubriformis – L₄
Cooperia oncophora – Adults
Cooperia punctata – Adults and L₄
Cooperia surnabada – Adults and L₄
Oesophagostomum radiatum – Adults and L₄
Trichuris spp. – Adults

Lungworms

Dictyocaulus viviparus – Adults and L₄

Cattle Grubs

Hypoderma bovis
Hypoderma lineatum

Mites

Psoroptes ovis (*Psoroptes communis* var. *bovis*)

Lice

Linognathus vituli
Solenopotes capillatus

Persistent Activity: CYDECTIN Injectable has been proven to effectively protect cattle from reinfection with *Dictyocaulus viviparus* and *Oesophagostomum radiatum* for 42 days after treatment, *Haemonchus placei* for 35 days after treatment, and *Ostertagia ostertagi* and *Trichostrongylus axei* for 14 days after treatment.

N. Effect of Supplement:

Addition of six new therapeutic claims:

Trichostrongylus colubriformis – Adult
Cooperia pectinata – Adult
Cooperia spatulata – Adult
Nematodirus helvetianus – Adult
Ostertagia ostertagi – L₄
Trichostrongylus axei – L₄

2. EFFECTIVENESS

A. Dosage Characterization

Effectiveness studies were presented in the original NADA 141-220 Freedom of Information (FOI) Summary dated May 20, 2005, establishing the recommended effective dose of CYDECTIN Injectable Solution for the control of various ecto- and endoparasites, and periods of persistent effect against a subset of endoparasites.

B. Substantial Evidence for Additional Endoparasite Indications

Six pivotal dose confirmation studies support the effectiveness of moxidectin 1% nonaqueous injectable solution against certain adult and larval stages of the gastrointestinal nematodes that are the subject of this supplemental NADA. All the trials were conducted in accordance with Good Clinical Practices as outlined in the VICH GL 9 Final Guidance (May 9, 2001). These trials utilized experimental infections superimposed on natural nematode burdens or administered to cattle free of nematodes prior to infection. Five of the six studies are summarized in the original FOI Summary (Study Numbers 0693-B-US-9-97, 0693-B-US-30-98, 0693-B-US-31-98, 0963-B-US-8-97, and 0863-B-US-26-98). Only one new study (Study Number 0693-B-US-37-00) was performed to provide supplemental data to complete the requirements for the new claims. Statistical analysis was performed only if six animals in the control group were adequately infected with the specific nematode species and stage. Counts were transformed by a $Y = \log_{10}(\text{count} + 1)$ transformation before performing a one-way analysis of variance (ANOVA) with treatment as a fixed effect in the model. The treatment effect was tested against the residual error in the ANOVA for significance at the 5% level. The least square means (LS Means) were calculated for each group and the moxidectin group was compared to the control group by the one-sided student's t-test at the 5% level of significance. Percent efficacy was determined by comparing the geometric mean worm counts of the treated group (T) with those of the control group (C) for each parasite present in adequate numbers in at least six control animals using Abbott's formula: $\% \text{ efficacy} = [(C-T/C) \times 100]$.

For an indication to be granted, a minimum of two studies was required that had the following: an adequate level of infection in at least 6 control animals, the treatment effect was significant at $\alpha = 0.05$, and 90% or greater efficacy using geometric means for each genus species of parasite. If there were more than 2 studies with an adequate level of infection, then the geometric means of the percent efficacy against a genus species of parasite from each study was added together and divided by the number of studies with that genus species of parasite. If this average was greater than or equal to 90%, then the claim was granted.

The individual studies are summarized below.

B1. Study Number 0693-B-US-37-00

- 1) Type of Study: Dose confirmation study in cattle with experimentally induced nematode infections

- 2) Investigator: Sivaja Ranjan B.V.Sc., Ph.D.
Fort Dodge Animal Health
Princeton, NJ

- 3) General Design:
 - a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Twenty Holstein steers weighing between 87 and 138 kg were randomly assigned to two treatment groups of 10 animals each. One group of animals was treated with moxidectin 1% nonaqueous injectable solution and one group served as the untreated control.
 - c. Housing: These cattle were maintained in concrete floored pens (5 animals/pen).
 - d. Infection: On Day 0 all cattle were inoculated with a mixed population of L₃ larvae containing *Nematodirus helvetianus*, *Cooperia spatulata*, *Cooperia pectinata*, and *Trichostrongylus colubriformis*. On Day 22 all cattle were inoculated with a mixed population of L₃ larvae containing *Ostertagia ostertagi* and *Trichostrongylus axei*.
 - e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL.
 - f. Route of Administration: Single subcutaneous injection in the neck region.
 - g. Doses: Moxidectin 1% nonaqueous injectable solution was administered on Day 0 at 0.02 mL/kg body weight to provide 0.2 mg moxidectin/kg body weight.
 - h. Controls: Placebo vehicle injectable solution was administered on Day 0 at 0.02 mL/kg body weight to provide 0 mg moxidectin/kg body weight.
 - i. Test Duration: All cattle were necropsied 14 days post-treatment.
 - j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.

- 4) Results: There was an adequate level of infection in at least 6 control animals against the following parasite species and stages. The percent efficacies are summarized in Table 2.B1:

Table 2.B1 Study Number 0693-B-US-37-00

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin at 0.2 mg/kg
Treatment during Adult Stage:		
<i>Cooperia pectinata</i>	207.3	99.7
<i>Cooperia spatulata</i>	943.5	94.5
<i>Nematodirus helvetianus</i>	489.6	99.3
<i>Trichostrongylus colubriformis</i>	142.3	100.0
Treatment during L ₄ Stage:		
<i>Ostertagia ostertagi</i>	3764.3	100.0
<i>Trichostrongylus axei</i>	131.3	100.0

5) Adverse Reactions: No adverse reactions to treatment were noted.

B2. Study Number 0693-B-US-9-97

- 1) Type of Study: Dose confirmation study in cattle with a combination of experimentally induced and naturally acquired nematode infections
- 2) Investigator: Sivaja Ranjan, B.V.Sc., Ph.D.
Fort Dodge Animal Health
Princeton, NJ
- 3) General Design:
 - a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Thirty beef crossbred steers weighing between 73 and 133 kg were blocked by pretreatment fecal egg count and randomly assigned within blocks to three treatment groups of 10 animals each.
 - c. Housing: These cattle were maintained in indoor pens by treatment group.
 - d. Infection: All cattle had an experimentally-induced lungworm infection superimposed on naturally-acquired nematode infections.
 - e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL
 - f. Route of Administration: Single subcutaneous injection in the neck region
 - g. Doses: Moxidectin 1% nonaqueous injectable solution was administered once on Day 0 at 0.02 or 0.03 mL/kg body weight to provide 0.2 or 0.3 mg moxidectin/kg body weight.

CYDECTIN (moxidectin) Injectable Solution

- h. Controls: Injectable vehicle containing no moxidectin was administered at 0.03 mL/kg to provide 0 mg moxidectin/kg body weight.
 - i. Test Duration: All cattle were necropsied 14 to 16 days post-treatment.
 - j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.
- 4) Results: The percent efficacies against parasites pertinent to this supplement at the approved dose are summarized in Table 2.B2:

Table 2.B2 Study Number 0693-B-US-9-97

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin 0.2 mg/kg
Treatment during Adult Stage:		
<i>Trichostrongylus colubriformis</i>	55.6	100
<i>Nematodirus helvetianus</i>	2559.4	95.9

- 5) Adverse Reactions: Fifteen study animals (4 from the control group, 7 from the 0.2 mg/kg treatment group, and 4 from the 0.3 mg/kg treatment group) had palpable injection site swellings at necropsy.

B3. Study Number 0693-B-US-30-98

- 1) Type of Study: Dose confirmation study in cattle with an experimentally-induced nematode infection
- 2) Investigators: Edward G. Johnson, D.V.M. Gary L. Zimmerman, D.V.M., Ph.D.
Johnson Research Zimmerman Research
Parma, ID Livingston, MT
- 3) General Design:
 - a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Forty-eight Holstein steer calves weighing between 156 and 245 kg were randomly assigned to six treatment groups of eight animals each. Two groups of animals were treated with moxidectin 1% nonaqueous injectable solution and two groups served as concurrent controls. The other two groups in this study were not relevant to the present NADA.
 - c. Housing: These cattle were maintained in separate outdoor pens by treatment group after experimental infections.

- d. Infection: All cattle were inoculated with a mixed population of L₃ larvae containing *Cooperia* spp. and *Trichostrongylus colubriformis* on Day 0.
 - e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL
 - f. Route of Administration: Single subcutaneous injection in the neck region
 - g. Doses: Moxidectin 1% nonaqueous injectable solution was administered on Day 6 (L₄) or Day 23 (Adult) at 0.02 mL/kg body weight to provide 0.2 mg moxidectin/kg body weight.
 - h. Controls: Control animals were not treated.
 - i. Test Duration: Each treated group and a control group were necropsied 14 days post-treatment.
 - j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.
- 4) Results: The percent efficacy against the parasite pertinent to this supplement is summarized in Table 2.B3:

Table 2.B3 Study Number 0693-B-US-30-98

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin at 0.2 mg/kg
Treatment during Adult Stage: <i>Cooperia pectinata</i>	145.3	95.5

- 5) Adverse Reactions: No adverse reactions to treatment were noted.

B4. Study Number 0693-B-US-31-98

- 1) Type of Study: Dose confirmation study in cattle with experimentally-induced nematode infections
- 2) Investigators: Larry L. Smith, D.V.M.
Larry Smith Research & Development
Lodi, WI
- 3) General Design:
 - a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Thirty Holstein male calves weighing between 80 and 194 kg were randomly assigned to three treatment groups of ten animals each.

- c. Housing: These cattle were maintained in separate outdoor pens by treatment group after experimental infections.
- d. Infection: On Day 0 all cattle were inoculated with a mixed population of L₃ larvae containing *Dictyocaulus viviparus*, *Haemonchus placei*, and *Trichostrongylus axei*. In addition, there were L₃ infective larvae of *Ostertagia* spp., *Cooperia* spp., and *Oesophagostomum* spp. present in the inoculum.
- e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL
- f. Route of Administration: Single subcutaneous injection in the neck region
- g. Doses: Moxidectin 1% nonaqueous injectable solution was administered on Day 5 (L₄) and to a second group on Day 28 (Adult) at 0.02 mL/kg body weight to provide 0.2 mg moxidectin/kg body weight.
- h. Controls: Control animals were not treated.
- i. Test Duration: All cattle were necropsied on Days 42 or 43, 14 to 15 days after the second group was treated.
- j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.
- 4) Results: The percent efficacies against the parasites pertinent to this supplement are summarized in Table 2.B4:

Table 2.B4 Study Number 0693-B-US-31-98

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin at 0.2 mg/kg
Treatment during Larval Stage:		
<i>Ostertagia ostertagi</i>	2849.1	100
<i>Trichostrongylus axei</i>	498.0	>99.9

- 5) Adverse Reactions: No adverse reactions to treatment were noted.

B5. Study Number 0693-B-US-8-97

- 1) Type of Study: Dose confirmation study in cattle with naturally acquired nematode infections
- 2) Investigator: Craig R. Reinemeyer, D.V.M., Ph.D.
University of Tennessee
Knoxville, TN

3) General Design:

- a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Thirty beef crossbred steer calves weighing between 191 and 274 kg were blocked by pretreatment fecal egg count and randomly assigned within blocks to three treatment groups of 10 animals each.
 - c. Housing: These cattle were maintained in separate pastures by treatment group.
 - d. Infection: All cattle had naturally-acquired nematode infections.
 - e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL
 - f. Route of Administration: Single subcutaneous injection in the neck region
 - g. Doses: Moxidectin 1% nonaqueous injectable solution was administered once on Day 0 at 0.02 or 0.03 mL/kg body weight to provide 0.2 or 0.3 mg moxidectin/kg body weight.
 - h. Controls: Injectable vehicle containing no moxidectin was administered at 0.03 mL/kg to provide 0 mg moxidectin/kg body weight.
 - i. Test Duration: All cattle were necropsied 12-16 days post-treatment.
 - j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.
- 4) Results: The percent efficacy against the parasite pertinent to this supplement at the approved dose is summarized in Table 2.B5:

Table 2.B5 Study Number 0693-B-US-8-97

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin at 0.2 mg/kg:
Treatment during Adult Stage: <i>Cooperia pectinata</i>	97.5	77.2

- 5) Adverse Reactions: Eleven study animals (3 from the 0.2 mg/kg treatment group, and 8 from the 0.3 mg/kg treatment group) had injection site lesions (fibrosis, firmness, or inflammation) at necropsy.

CYDECTIN (moxidectin) Injectable Solution

B6. Study Number 0863-B-US-26-98

- 1) Type of Study: Dose confirmation study in cattle with experimentally-induced nematode infections
- 2) Investigators: Sivaja Ranjan, B.V.Sc., Ph.D.
Fort Dodge Animal Health
Princeton, NJ
- 3) General Design:
 - a. Purpose: This study was designed to confirm the effective dose for the treatment and control of nematode infections in cattle.
 - b. Animals: Forty-eight Holstein steer calves weighing between 112 and 172 kg were randomly assigned to six treatment groups of eight animals each. Two groups of animals were treated with moxidectin 1% nonaqueous injectable solution and two groups served as concurrent controls. The other two groups in this study were not relevant to the present NADA.
 - c. Housing: These cattle were maintained in separate indoor pens by treatment group with 4 animals per pen.
 - d. Infection: All cattle were inoculated with a mixed population of L₃ larvae containing *Cooperia* spp. and *Trichostrongylus colubriformis* on Day 0. In addition, half of the groups were also infected with *Dictyocaulus viviparus* infective larvae.
 - e. Dosage Form: Moxidectin 1% nonaqueous injectable solution, 10 mg/mL
 - f. Route of Administration: Single subcutaneous injection in the neck region
 - g. Doses: Moxidectin 1% nonaqueous injectable solution was administered on Day 5 (L4) or Day 26 (Adult) at 0.02 mL/kg body weight to provide 0.2 mg moxidectin/kg body weight.
 - h. Controls: Control animals were not treated.
 - i. Test Duration: Groups infected with *D. viviparus* and treated on Day 5 were necropsied 19 to 20 days post-treatment. The groups treated on Day 26 were necropsied 14 to 15 days post-treatment.
 - j. Pertinent Measurements/Observations: Nematodes recovered from animals at necropsy were counted and identified.

CYDECTIN (moxidectin) Injectable Solution

4) Results: The percent efficacy against the parasite pertinent to this supplement is summarized in Table 2.B6:

Table 2.B6 Study Number 0693-B-US-26-98

Nematode Species and Stage	Geometric Mean in Controls	% Efficacy of Moxidectin at 0.2 mg/kg
Treatment during Adult Stage: <i>Cooperia spatulata</i>	1608.6	99.6

5) Adverse Reactions: No adverse reactions to treatment were noted.

C. New Effectiveness Claims

Table 2.C lists the studies (with corresponding efficacy results) that support the effectiveness of 1% moxidectin nonaqueous injectable solution against the new parasite claims granted in this supplemental NADA.

Table 2.C: Effectiveness Studies

Parasite	Treatment Stage	Study	Study % Efficacy
<i>Trichostrongylus colubriformis</i>	Adult	0693-B-US-37-00	100
		0693-B-US-9-97	100
<i>Cooperia pectinata</i>	Adult	0693-B-US-37-00	99.7
		0693-B-US-30-98	95.5
		0693-B-US-8-97	77.2
<i>Cooperia spatulata</i>	Adult	0693-B-US-37-00	94.5
		0863-B-US-26-98	99.6
<i>Nematodirus helvetianus</i>	Adult	0693-B-US-37-00	99.3
		0693-B-US-9-97	95.9
<i>Ostertagia ostertagi</i>	L4	0693-B-US-37-00	>99.9
		0693-B-US-31-98	>99.9
<i>Trichostrongylus axei</i>	L4	0693-B-US-37-00	100
		0693-B-US-31-98	100

***Bold** indicates supplemental data from the new study

3. TARGET ANIMAL SAFETY

The Center for Veterinary Medicine (CVM) did not require target animal safety studies for this supplemental approval. The FOI Summary for the original approval of NADA 141-220 (approved May 20, 2005) contains a summary of target animal safety studies for cattle.

4. HUMAN FOOD SAFETY

CVM did not require human food safety studies for this supplemental approval. The FOI Summary for the original approval of NADA 141-220 (approved May 20, 2005) contains a summary of human food safety studies.

5. AGENCY CONCLUSIONS

The data submitted in support of this NADA satisfy the requirements of Section 512 of the Federal Food, Drug, and Cosmetic Act and 21 CFR Part 514 of the implementing regulations. The data demonstrate that CYDECTIN (moxidectin) Injectable Solution for Beef and Nonlactating Dairy Cattle at the dose rate of 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight is effective for the treatment and control of three additional parasite species and additional life stages for three previously approved parasites of cattle.

An Acceptable Daily Intake (ADI) of 0.004 mg/kg/day has been established for moxidectin. A tolerance of 900 ppb for residues of parent moxidectin (marker residue) in fat (target tissue) of cattle has been established. A withdrawal period of 21 days is required for this use of moxidectin in cattle. Tolerances of 50 ppb and 200 ppb have also been established for residues of moxidectin in muscle and liver of cattle, respectively.

The data submitted for the CYDECTIN (moxidectin) Injectable Solution for Beef and Nonlactating Dairy Cattle support the marketing of the product as an over-the-counter new animal drug. Adequate directions for use have been written for the layman, and the conditions for use prescribed on the labeling are likely to be followed in practice. Therefore, CVM has concluded that this product shall have over-the-counter marketing status.

Under Section 512(c)(2)(F)(iii) of the Federal Food, Drug, and Cosmetic Act, this approval qualifies for THREE years of marketing exclusivity beginning on the date of approval. This exclusivity is based on 5 previously submitted dose confirmation studies and one new dose confirmation study submitted in this application. The three years of marketing exclusivity applies only to the new indications of treatment and control of adult *Trichostrongylus colubriformis*, *Cooperia pectinata*, *Cooperia spatulata*, and *Nematodirus helvetianus* and L₄ *Ostertagia ostertagi* and *Trichostrongylus axei*.

CYDECTIN (moxidectin) Injectable Solution for Beef and Nonlactating Dairy Cattle is under the following US patent numbers:

<u>U.S. Patent Number</u>	<u>Date of Expiration</u>
4,916,154	April 10, 2007
5,965,603	July 8, 2018

6. ATTACHMENTS

Facsimile labeling is attached as indicated below:

- A. Insert Label
- B. Bottle Labels: 200 mL and 500 mL
- C. Carton Labels: 200 mL (40% reduction) and 500 mL (50% reduction)

4930B



NADA 141-220 Approved by FDA



CYDECTIN®

moxidectin

Injectable Solution for Beef and Nonlactating Dairy Cattle

Antiparasitic

Contains 10 mg moxidectin/mL

Not for use in female dairy cattle of breeding age, veal calves, and calves less than 8 weeks of age.

For Treatment of Infections and Infestations Due to Internal and External Parasites of Cattle

Consult your veterinarian for assistance in the diagnosis, treatment and control of parasitism.

PRODUCT DESCRIPTION

CYDECTIN Injectable Solution is a ready-to-use, sterile solution containing 1% moxidectin. Moxidectin is an endectocide in the milbemycin chemical class which shares the distinctive mode of action characteristic of macrocyclic lactones. CYDECTIN Injectable is specially formulated to allow moxidectin to be absorbed from the site of injection and distributed internally to the areas of the body affected by endo- and/or ectoparasitism. Moxidectin binds selectively and with high affinity to glutamate-gated chloride ion channels which are critical to the function of invertebrate nerve and muscle cells. This interferes with neurotransmission resulting in paralysis and elimination of the parasite.

INDICATIONS

CYDECTIN Injectable, when administered at the recommended dose level of 0.2 mg/2.2 lb (0.2 mg/kg) body weight, is effective in the treatment and control of the following internal and external parasites of cattle:

Gastrointestinal Roundworms

Ostertagia ostertagi - Adults and L₄
(Including inhibited Larvae)
Haemonchus placei - Adults
Trichostrongylus axei - Adults and L₄
Trichostrongylus colubriformis - Adults and L₄
Cooperia oncophora - Adults
Cooperia pectinata - Adults
Cooperia punctata - Adults and L₄
Cooperia spatulata - Adults
Cooperia sumabada - Adults and L₄
Nematodirus helvetianus - Adults
Oesophagostomum radiatum - Adults and L₄
Trichuris spp. - Adults

Lungworms

Dictyocaulus viviparus - Adults and L₄

Cattle Grubs

Hypoderma bovis
Hypoderma lineatum

Mites

Psoroptes ovis
(*Psoroptes communis* var. *bovis*)

Lice

Linognathus vituli
Solenopotes capillatus

Persistent Activity: CYDECTIN Injectable has been proven to effectively protect cattle from reinfection with *Dictyocaulus viviparus* and *Oesophagostomum radiatum* for 42 days after treatment, *Haemonchus placei* for 35 days after treatment, and *Ostertagia ostertagi* and *Trichostrongylus axei* for 14 days after treatment.

Management Considerations for External Parasites: For most effective external parasite control, CYDECTIN Injectable should be administered to all cattle in the herd. Cattle entering the herd following this administration should be treated prior to introduction. Consult your veterinarian or a livestock entomologist for the most appropriate time to administer CYDECTIN Injectable in your location to effectively control external parasites.

DOSAGE

The recommended rate of administration for CYDECTIN Injectable is 1 mL for each 110 lb (50 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight. The table below will assist in the calculation of the appropriate volume of injectable which must be administered based on the weight of animal being treated. Be careful not to overdose animals; estimate animal's body weight as closely as possible or weigh animals individually.

Weight (lb)	165	220	330	440	550	660	770	880	990	1100
Weight (kg)	75	100	150	200	250	300	350	400	450	500
Dose (mL)	1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0

ADMINISTRATION

CYDECTIN Injectable should be administered by subcutaneous injection under the loose skin in front of or behind the shoulder (Figure 1). Needles 1/2 to 3/4 inch in length and 16 to 18 gauge are recommended for subcutaneous injections. Use sterile, dry equipment and aseptic procedures when withdrawing and administering CYDECTIN.

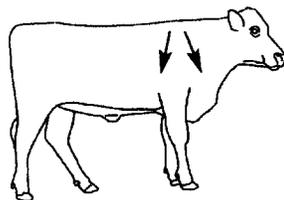


Figure 1. Sites for administration of CYDECTIN Injectable

HUMAN WARNINGS

Not For Use in Humans. Keep this and all drugs out of the reach of children. The material safety data sheet (MSDS) provides more detailed occupational safety information. A copy of the MSDS can be obtained by calling 1-866-339-6761. To report adverse reactions attributable to exposure to this product, call 1-800-533-8536.

RESIDUE WARNINGS

Cattle must not be slaughtered for human consumption within 21 days of treatment. Because a withholding time in milk has not been established for this product, do not use in female dairy cattle of breeding age. A withdrawal period has not been established for preparturient calves. Do not use in calves to be processed for veal.

ANIMAL SAFETY WARNINGS

Do not use in sick, debilitated, or underweight animals. In foreign countries there have been reports of adverse effects, including death. This product should not be used in calves less than 8 weeks of age because safety testing has not been done in the U.S. In calves less than 8 weeks of age.

ENVIRONMENTAL WARNINGS

Studies indicate that when moxidectin comes in contact with the soil, it readily and tightly binds to the soil and becomes inactive. Free moxidectin may adversely affect fish and certain aquatic organisms. Do not contaminate water by direct application or by improper disposal of drug containers.

PRECAUTIONS

CYDECTIN Injectable has been formulated specifically for subcutaneous injection in cattle and should not be given by other routes of administration. Subcutaneous injection can cause transient local tissue reaction that may result in trim loss of edible tissue at slaughter if animals are slaughtered within 35 days after treatment. This product should not be used in other animal species as severe adverse reactions, including fatalities in dogs, may result.

CYDECTIN Injectable is effective against the migrating stage of cattle grubs (*Hypoderma* larvae). Treatment with CYDECTIN Injectable during the period when grubs are migrating through vital areas may cause undesirable host-parasite reactions. Killing *H. lineatum* when they are located in peri-oesophageal tissues may cause bloat. Killing *H. bovis* when they are in the vertebral canal may cause staggering or hindlimb paralysis. Cattle should be treated as soon as possible after heel fly (warble fly) season to avoid this potential problem. Cattle treated with CYDECTIN Injectable at the end of fly season can be retreated during the winter without danger of grub-related reactions. Consult your veterinarian for more information regarding these secondary grub reactions and the correct time to treat with CYDECTIN Injectable.

ANIMAL SAFETY

U.S. tolerance and toxicity studies have demonstrated that CYDECTIN Injectable has an adequate margin of safety for use in cattle 8 weeks of age and older. No toxic signs were seen in growing cattle given up to 5 times the recommended dose. Calves as young as 8 weeks of age showed no toxic signs when treated with up to 3 times the recommended dose while nursing from cows concurrently treated with the recommended dose level of CYDECTIN Injectable. Mild, transient ataxia was noted in growing cattle receiving 10 times the recommended dose and in bulls treated at 4.5 times the recommended dose. In breeding animals (bulls and cows in estrous and during early, mid and late pregnancy), treatment with at least 3 times the recommended dose had no effect on breeding performance.

Signs of toxicity include ataxia, excessive salivation, depression, and mydriasis. These signs usually occur within 12 to 48 hours post-treatment.

STORAGE

Store product at or below 77°F (25°C). Protect from light.

DISPOSAL

Do not contaminate water by direct application or by improper disposal of drug containers. Dispose of containers in an approved landfill or by incineration.

PACKAGE INFORMATION

CYDECTIN Injectable is available in 200 mL and 500 mL polyethylene bottles.

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U.S. Patent Nos. 4,916,154 and 5,965,603

Fort Dodge Animal Health
Fort Dodge, Iowa 50501 USA

NDC 6880-4000-02

CYDECTIN

moxidectin
Injectable Solution for
Beef and Nonlactating
Dairy Cattle
Antiparasitic

For Treatment of Infections and Infestations Due to External and Internal Parasites of Cattle.

DOSAGE: The recommended rate of administration for CYDECTIN Injectable is 1 mL for each 100 lb (45 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (1.0 kg) body weight. Do not use to treat calves unless animals are fully weaned or clearly in process of weaning.

PRECAUTIONS: This product is intended for subcutaneous use in cattle only and should not be used in other animal species or under adverse conditions, including facilities in dogs, sheep, swine.

STORAGE: Store product at or below 77°F (25°C). Protect from light.

WARNING: Do not combine with other injectable or topical anthelmintic or insecticidal drugs. Dispose of contents in an approved health or by incineration.

Read accompanying package insert carefully before use.

Net Content
Contains 10 mg moxidectin/mL

Net Content to Treat 2000 lbs (907 kg) of Cattle (See label for use and other important information)

Contains
200 mL

10120001

MSL 101-001, Approved by FDA

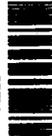


WARNING: For Use in Humans: Keep this and all drugs out of the reach of children. To report adverse effects, call 1-800-424-2289.

WARNING: Cattle must not be processed for human consumption within 21 days of treatment. Do not use in calves to be processed for human consumption. Do not use in calves to be processed for human consumption. Do not use in calves to be processed for human consumption.

WARNING: Do not use in sick, debilitated, or otherwise stressed animals. Do not use in sick, debilitated, or otherwise stressed animals. Do not use in sick, debilitated, or otherwise stressed animals.

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Lot:
Exp. Date:

NDC 0858-4030-03

CYDECTIN

moxidectin Injectable Solution for Beef and Nonlactating Dairy Cattle Antiparasitic

For Treatment of Infections and Infestations Due to Internal and External Parasites of Cattle.

DOSE: The recommended rate of administration for CYDECTIN Injectable is 1 mL for each 110 lb (50 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight. Be careful not to overdose animals; estimate animal's weight as closely as possible or weigh animals individually.

PRECAUTIONS: This product is intended for subcutaneous use in cattle only and should not be used in other animal species as severe adverse reactions, including fatalities in dogs, may result.

STORAGE: Store product at or below 77°F (25°C). Protect from light.

DISPOSAL: Do not contaminate water by direct application or by improper disposal of drug container. Dispose of containers in an approved landfill or by incineration.

Read accompanying postage insert carefully before use.

Sterile

Contains 10 mg moxidectin/mL

Not for use in female dairy cattle of breeding age, veal calves, and calves less than 8 weeks of age.

Contents
500 mL



MADA 141-220, Approved by FDA



HUMAN WARNINGS: Not For Use in Humans. Keep this and all drugs out of the reach of children. To report adverse reactions attributable to exposure to this product, call 1-800-853-0588.

RESUME WARNINGS: Cattle must not be slaughtered for human consumption within 21 days of treatment. Because a withholding time in milk has not been established for this product, do not use in female dairy cattle of breeding age. A withholding period has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

ANIMAL SAFETY WARNINGS: Do not use in sick, debilitated, or underweight animals. In foreign countries there have been reports of adverse effects, including death. This product should not be used in calves less than 8 weeks of age because safety testing has not been done in the U.S. in calves less than 8 weeks of age.

U.S. Patent Nos. 4,916,154 and 5,905,803
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Fort Dodge Animal Health
Fort Dodge, Iowa 50501 USA

Lot:
Exp. Date:



0858

BYEHL

Antiparasitic
 Injectable Solution for
 Beef and Broodstock
 Dairy Cattle
 moxidectin
CYDECTIN

NDC 0892-4890-02
CYDECTIN CYDECTIN CYDECTIN CYDECTIN



Read accompanying package insert carefully before use.
 See bottom flap for lot number and expiration date.
 US Patent Nos.
 4,916,154 and 5,985,803
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 Fort Dodge Animal Health
 Fort Dodge, Iowa 50501 USA

WARNING: Not For Use in Humans. This is not an oral drug and is not for use in humans. The material safety data sheet (MSDS) provides more detailed occupational safety information. A copy of the MSDS can be obtained by calling 1-800-333-8933. To report adverse reactions attributable to exposure to this product, call 1-800-333-8933.

WARNING: Cattle must not be slaughtered for human consumption within 21 days of treatment. Because a withdrawal time is still not established for this product, do not use to handle dairy cattle of breeding age. A withdrawal period has not been established for processing calves. Do not use in calves to be processed for veal.

ANIMAL SAFETY WARNINGS: Do not use in sick, debilitated, or underweight animals. In foreign countries there have been reports of adverse effects, including death. This product should not be used in calves less than 8 weeks of age because safety testing has not been done in the U.S. in calves less than 8 weeks of age.

moxidectin
**Injectable Solution for
 Beef and Broodstock
 Dairy Cattle**
 Antiparasitic
 Sterile

Contains 10 mg moxidectin/mL.
 Not for use in female dairy cattle of breeding age, veal calves, and calves less than 8 weeks of age.
 For treatment of infections and infestations only in calves and broodstock.
 Contains **200 mL**
 FORT DODGE
 NADA 140-088, Approved by FDA



CYDECTIN Injectable Solution is a ready-to-use, sterile solution containing 1% moxidectin.

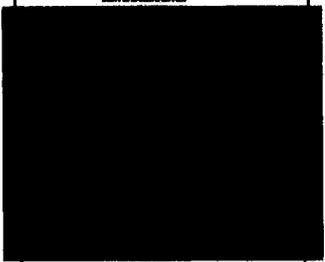
USAGE: The recommended rate of administration for **CYDECTIN** Injectable is 1 mL per 100 lb (45 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight. Do not mix with overlying antibiotic solutions unless weight as closely as possible or weigh animals individually.

PRECAUTIONS: This product is intended for intramuscular use only and should not be used in other tissues or routes. In severe adverse reactions, including reactions in dogs, may result.

STORAGE: Store product at or below 77°F (25°C). Protect from light.

DISPOSAL: Do not contaminate water by direct application or by improper disposal of drug containers. Dispose of containers in an approved landfill or by incineration.

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 3752 48543 3752 48548





Antiparasitic
Injectable Solution for
Beef and Nonlactating
Dairy Cattle
moxidectin

CYDECTIN

NDC 0098-8230-01

CYDECTIN

CYDECTIN

CYDECTIN

CYDECTIN



Read accompanying package insert carefully before use.

See bottom flap for lot number and expiration date.

U.S. Patent Nos.
4,916,154 and 5,965,603
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Fort Dodge Animal Health
Fort Dodge, Iowa 50501 USA

HUMAN WARNINGS: Not For Use in Humans. Keep this and all drugs out of the reach of children. The material safety data sheet (MSDS) provides more detailed occupational safety information. A copy of the MSDS can be obtained by calling 1-800-330-8761. To report adverse reactions attributable to exposure to this product, call 1-800-330-8538.

RESIDUE WARNINGS: Cattle must not be slaughtered for human consumption within 21 days of treatment. Because a withholding time in milk has not been established for this product, do not use in female dairy cattle of breeding age. A withholding period has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

ANIMAL SAFETY WARNINGS: Do not use in sick, debilitated, or underweight animals. In foreign countries there have been reports of adverse effects, including death. This product should not be used in calves less than 6 weeks of age because safety testing has not been done in the U.S. in calves less than 6 weeks of age.

moxidectin
**Injectable Solution for
Beef and Nonlactating
Dairy Cattle**
Antiparasitic
Sterile
Contains 10 mg moxidectin/mL

Not for use in female dairy cattle of breeding age, veal calves, and calves less than 6 weeks of age.

For Treatment of Infections
and Parasites in
Beef and Lactating
Dairy Cattle



Contains
500 mL

FORT DODGE

NADA 141-228, Approved by FDA

CYDECTIN Injectable Solution is a ready-to-use, sterile solution containing 1% moxidectin.

DOSE: The recommended rate of administration for CYDECTIN Injectable is 1 mL for each 110 lb (50 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight. Do not exceed recommended dose; administer animal's weight as closely as possible or weigh animals individually.

PRECAUTIONS: This product is intended for subcutaneous use in cattle only and should not be used in other animal species as severe adverse reactions, including fatalities in dogs, may result.

STORAGE: Store product at or below 77°F (25°C). Protect from light.

DISPOSAL: Do not contaminate water by direct application or by improper disposal of drug containers. Dispose of containers in an approved landfill or by incineration.

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4835B 4915B