Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

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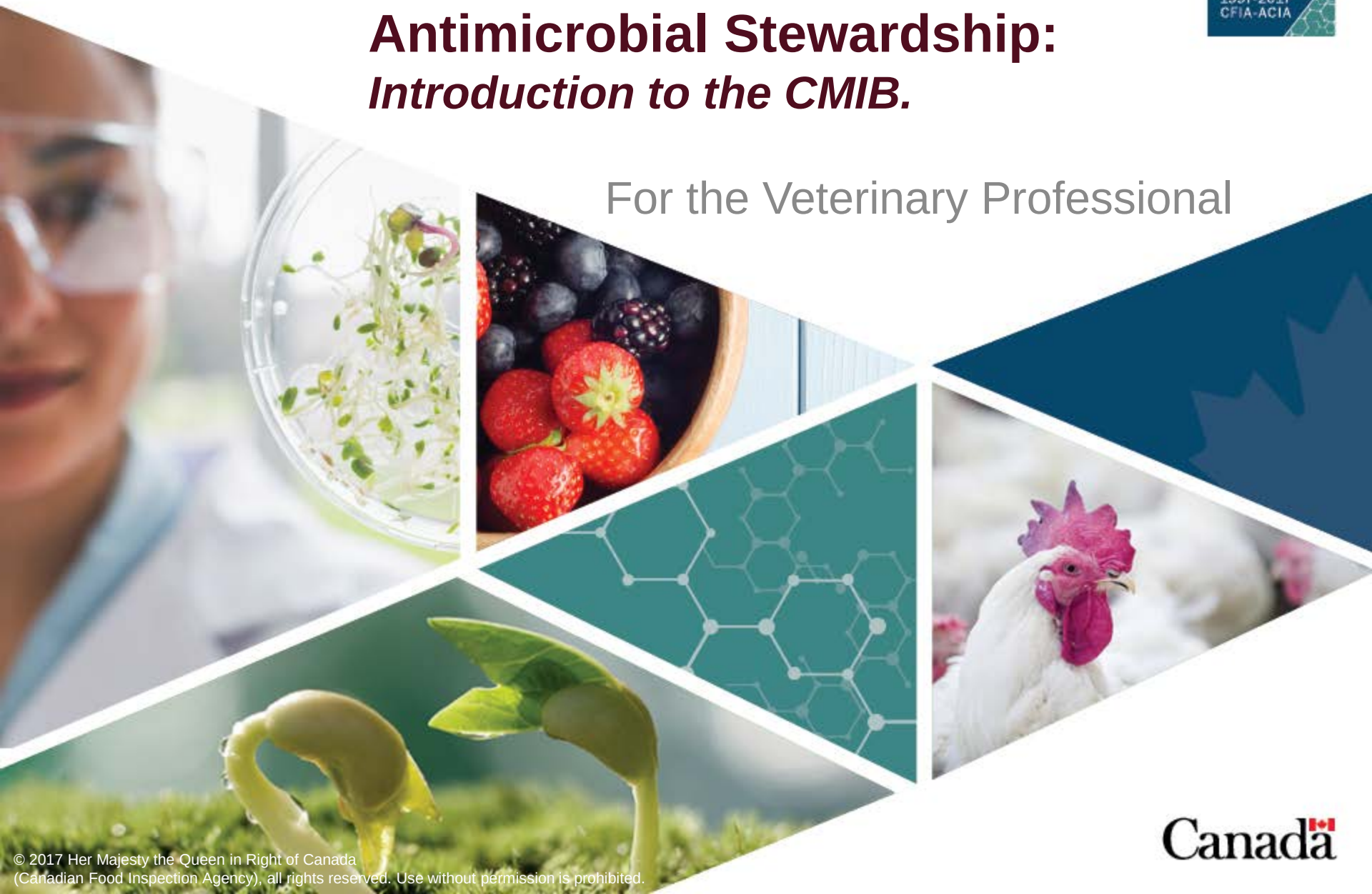
CFIA-ACIA

Antimicrobial Stewardship:
Introduction to the CMIB.

For the Veterinary Professional



Canada

Outline

- What is the Compendium of Medicating Ingredients Brochures (CMIB)?
- What is the purpose of CMIB?
- Which changes have been made to the structure of the CMIB?
- An example of how to use the document to prescribe a medicated feed

What is the CMIB?

A regulatory document featuring a collection of **Medicated Ingredient Brochures (MIB)** which provide information for all Health Canada approved in-feed medications.

Each active ingredient has its own MIB based on approved product labels and includes:

- Approved claims for each medication
- Drug levels (dosages) for each claim
- Information required to appear on the medicated feed label
- Any restrictions for the use of the medication, such as the withdrawal time

Purpose of the CMIB

- Feeds manufactured with medicated ingredients that are **Over-the-Counter (OTC)** and pursuant to the CMIB will **not require a veterinary prescription prior to manufacture or sale** (except in Quebec)
- Feeds manufactured with a **Prescription** medicated ingredient **according to the CMIB** can be **mixed prior to the receipt of a veterinary prescription** i.e., “floor stocked” and made available for sale with a valid veterinary prescription
- Feeds manufactured with a medicated ingredient that does not follow the CMIB (i.e., off-label) will require a veterinary prescription **prior to manufacture**.

Purpose of the CMIB

The CMIB is a reference document for use by all stakeholders which describes which medications have been approved to be mixed into feeds, under what circumstances and how they are to be mixed to facilitate the manufacture of feeds prior to receiving a veterinary prescription (i.e., floor-stocked).

- Section 14 part (b) of the Feeds Regulations states:

A feed shall not contain medicating ingredients of a brand, at a level or for a purpose or species other than as set out in the Compendium of Medicating Ingredients Brochures unless the feed is a veterinary prescription feed.

Changes to the CMIB-2018

The introduction of new regulations to combat antimicrobial resistance have triggered a number of changes to the CMIB

Prior to 2018		**2018 and Beyond**
Growth promotion claims present	→	Growth promotion claims removed, including removal of products with solely GP claims
Only OTC medications	→	Both OTC and Prescription products
No DIN numbers listed	→	DIN numbers listed for all products
MIBs listed by number code, ex. tylosin was #80	→	MIBs listed by letter code, ex. tylosin is now TYL (based on active)

How the CMIB is structured?

The CMIB contains an introductory chapter and MIBs that are searchable in the following ways:

- By active ingredient
- By brand name
- By livestock species
- By sponsor/manufacturer

Note: The CMIB is a living document that is updated regularly. It is your responsibility to ensure you are referencing the most up-to-date MIB.

How each MIB is structured

Each MIB within the compendium is organized into three sections:

1. Introductory profile
2. Claim (indication) – *with directions for use and restrictions*
3. Accepted compatibilities

1. The introductory profile

- Prescription status (i.e., Prescription or OTC)
- Active ingredient
- Species of livestock for which the MIB is approved
- Table of approved claims for which the medication may be used
- Approved brands (of DIN premixes that contain the medicating ingredient)
- Approved form of feed (granular, meal or pellet) – where applicable

2. Claim (Indication)

- Level of medication in the finished feed
  - Expressed as a mg of active per kg of complete feed (%)
  - May also be specified as kg/head/day, per kg of body weight
- Directions for feeding – length of time to feed the medicated feed
- Any additional directions to the feed manufacturer and/or the end-user
- Warnings (human safety) and Cautions (animal safety)
  - Warnings and cautions must appear on the label for the finished feed, except where noted in the individual MIB.

3. Accepted compatibilities

- Compatibilities are medications that have been approved for use concurrently in feed, based on safety and a lack of drug interference
- Accepted compatibilities are species and claim-specific
- Approved compatibilities are listed in a table at the end of the MIB section for that species
- Directions for use and restrictions for each compatible medication must be followed
- When combining multiple medications the **longest withdrawal time** must be followed and **must appear on the label** for the finished feed (only one withdrawal time should be listed on the feed label)

How to use the CMIB

- The following is a demonstration using the CMIB for:
  - Prescribing a CMIB-compliant medicated feed
  - Prescribing an extra-label medicated feed

Our scenario

A veterinarian wishes to issue a prescription for a “Beef Supplement” medicated with chlortetracycline hydrochloride (listed as CTC in the CMIB) as an aid in the prevention of foot rot as indicated in the CMIB.

Note that CTC is a medically important antimicrobial.

The veterinarian’s client - a local beef producer - currently purchases a non-medicated beef premix at a local feed manufacturing facility and mixes it at 25 kg per tonne of complete feed in his on-farm mixer.

The prescription will allow his client to purchase this same supplement but with the addition of the medically important antimicrobial CTC, which as of December 1, 2018 requires a veterinary prescription to be issued before the medicated feed can be purchased.

CMIB
Where do I find it?

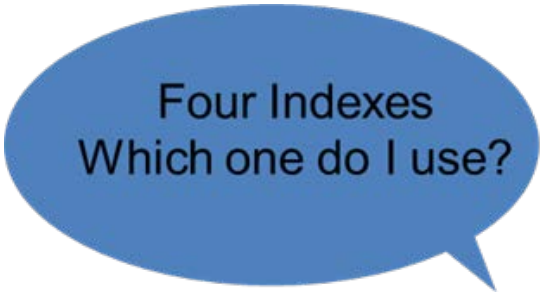
CFIA website (www.inspection.gc.ca)

Under “Animals” click on “Feeds”

CMIB
Where do I find it?

Click on “CMIB Table of Contents”

Which index to use?



We can find “Chlortetracycline hydrochloride” (CTC) using any of the four indexes.

To find CTC using:
Index of medicating ingredients brochures by name

Index of medicating ingredient brochures by name

This page is part of the Guidance Document Repository (GDR).

Looking for related documents?
Search for related documents in the Guidance Document Repository

Date of revision: July 2018

Medicating ingredient brochures by name

MIB code	Name of medicating ingredient	Status	Name of approved brand(s)	Date of revision
AMP	Amprolium	Over the counter	Amprol Feed Premix	2017-10
AVI	Avilamycin	Veterinary prescription	1. Surmax 100 Premix 2. Surmax 200 Premix	2018-04
BACN-M	Bacitracin (as bacitracin methylenedisalicylate)	Veterinary prescription	1. BMD 110 G 2. Bacitracin MD	2018-04
BACN-Z	Bacitracin (as zinc bacitracin)	Veterinary prescription	1. Albac 110 Zinc Bacitracin Premix 2. Zinc Bacitracin 110	2018-04
BAM	Bambermycins	Over the counter	Flavomycin 4 Antibiotic Premix	2006-09
CLO	Clopidol	Over the counter	Coyden 25 Anticoccidial Premix	2017-07
CSP	Chlortetracycline hydrochloride, Sulfamethazine and Penicillin	Veterinary prescription	1. Aureo S-P 250 G Granular Medicated Premix 2. Aureomix 625 G Granular Medicated Premix 3. Chlor 250 Medicated Premix 4. Super Chlor 250 Medicated Premix 5. Super Chlorosol-250 Drug Premix	2018-04
CTC	Chlortetracycline hydrochloride	Veterinary prescription	1. Aureomycin 220 G Granular Medicated Premix 2. Chlor 50 Medicated Feed Premix 3. Chlor 100 Granular Medicated Premix 4. Deracin 22% Granular Premix	2018-04

Index contains:

- link by MIB code – “CTC”
- Name of medicating ingredient - Chlortetracycline hydrochloride
- Status - Veterinary prescription
- Approved brand(s) – 4 available
- Date of revision of MIB – 2018-04

Index of medicating ingredient brochures by name

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Looking for related documents?

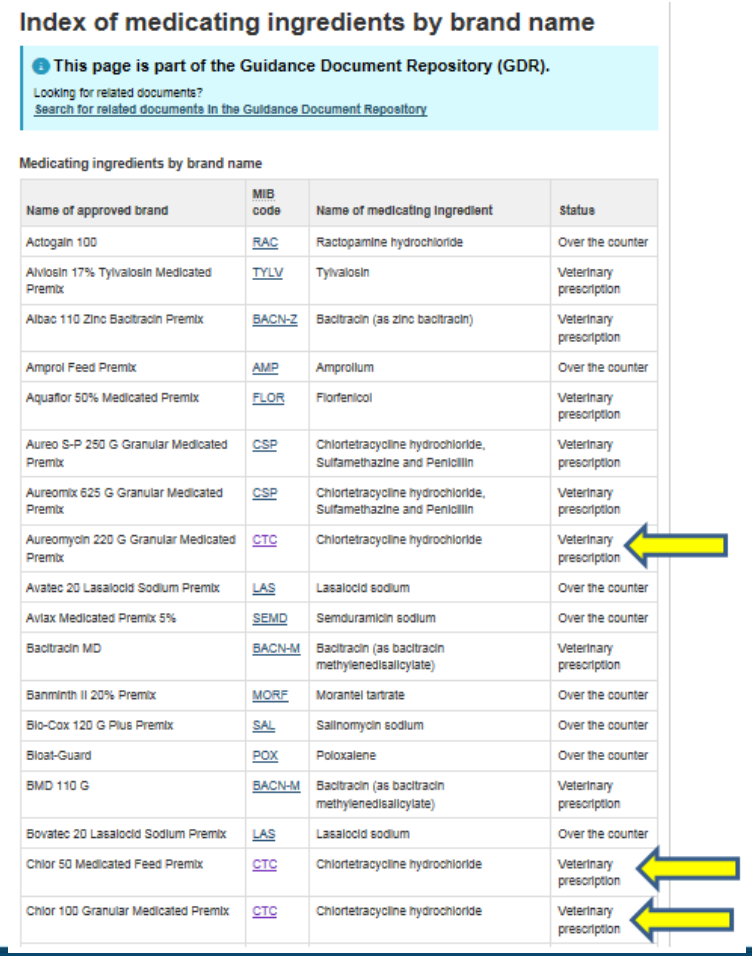
Search for related documents in the Guidance Document Repository

Date of revision: November 2018

Medicating ingredient brochures by name

MIB code	Name of medicating ingredient	Status	Name of approved brand(s)	Date of revision
A[illegible]2	Amprolium	Over th[illegible]ounter	Amprol Feed P[illegible]mix	2017[illegible]0
CTC	Chlortetracycline hydrochloride	Veterinary prescription	1. Aureomycin 220 G Granular Medicated Premix 2. Chlor 50 Medicated Feed Premix 3. Chlor 100 Granular Medicated Premix 4. Deracin 22% Granular Premix	2018-04

To find CTC using:
Index of medicating ingredients by brand name



Index of medicating ingredients by brand name

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Medicating ingredients by brand name

Name of approved brand	MIB code	Name of medicating ingredient	Status
Actogain 100	RAC	Ractopamine hydrochloride	Over the counter
Alviosin 17% Tylvalosin Medicated Premix	TYLV	Tylvalosin	Veterinary prescription
Albac 110 Zinc Bacitracin Premix	BACN-Z	Bacitracin (as zinc bacitracin)	Veterinary prescription
Amprol Feed Premix	AMP	Amprolium	Over the counter
Aquaflor 50% Medicated Premix	FLOR	Florfenicol	Veterinary prescription
Aureo S-P 250 G Granular Medicated Premix	CSP	Chlortetracycline hydrochloride, Sulfamethazine and Penicillin	Veterinary prescription
Aureomix 625 G Granular Medicated Premix	CSP	Chlortetracycline hydrochloride, Sulfamethazine and Penicillin	Veterinary prescription
Aureomycin 220 G Granular Medicated Premix	CTC	Chlortetracycline hydrochloride	Veterinary prescription
Avatec 20 Lasalocid Sodium Premix	LAS	Lasalocid sodium	Over the counter
Aviax Medicated Premix 5%	SEMD	Semduramicin sodium	Over the counter
Bacitracin MD	BACN-M	Bacitracin (as bacitracin methylenedisalicylate)	Veterinary prescription
Banminth II 20% Premix	MORF	Morantel tartrate	Over the counter
Bio-Cox 120 G Plus Premix	SAL	Salinomycin sodium	Over the counter
Bloat-Guard	POX	Poloxalene	Over the counter
BMD 110 G	BACN-M	Bacitracin (as bacitracin methylenedisalicylate)	Veterinary prescription
Bovatec 20 Lasalocid Sodium Premix	LAS	Lasalocid sodium	Over the counter
Chlor 50 Medicated Feed Premix	CTC	Chlortetracycline hydrochloride	Veterinary prescription
Chlor 100 Granular Medicated Premix	CTC	Chlortetracycline hydrochloride	Veterinary prescription

Click on “Index of medicating ingredients by brand name”

Index contains:

- Name of approved brand (listed alphabetically)
  - e.g., “Chlor 100 Granular Medicated Premix”
- MIB code and link to CMIB - “CTC”
- Name of medicating ingredient - Chlortetracycline hydrochloride
- Status - Veterinary prescription

Index of medicating ingredients by brand name

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Looking for related documents?
Search for related documents in the Guidance Document Repository

Date Revised October 2018

Medicating ingredients by brand name

Name of approved brand	MIB code	Name of medicating ingredient	Status
Actogain 100	RAC	Ractopamine hydrochloride	Over the counter
Aureomycin 220 G Granular Medicated	CTC	Chlortetracycline hydrochloride	Veterinary
Bovatec 20 Lasalocid Sodium Premix	LAS	Lasalocid sodium	Over the counter
Chlor 50 Medicated Feed Premix	CTC	Chlortetracycline hydrochloride	Veterinary prescription
Chlor 100 Granular Medicated Premix	CTC	Chlortetracycline hydrochloride	Veterinary prescription

To find CTC using:
Index of medicating ingredients approved by livestock species

Index of medicating ingredients approved by livestock species

This page is part of the Guidance Document Repository (GDR).

Looking for related documents?
Search for related documents in the Guidance Document Repository

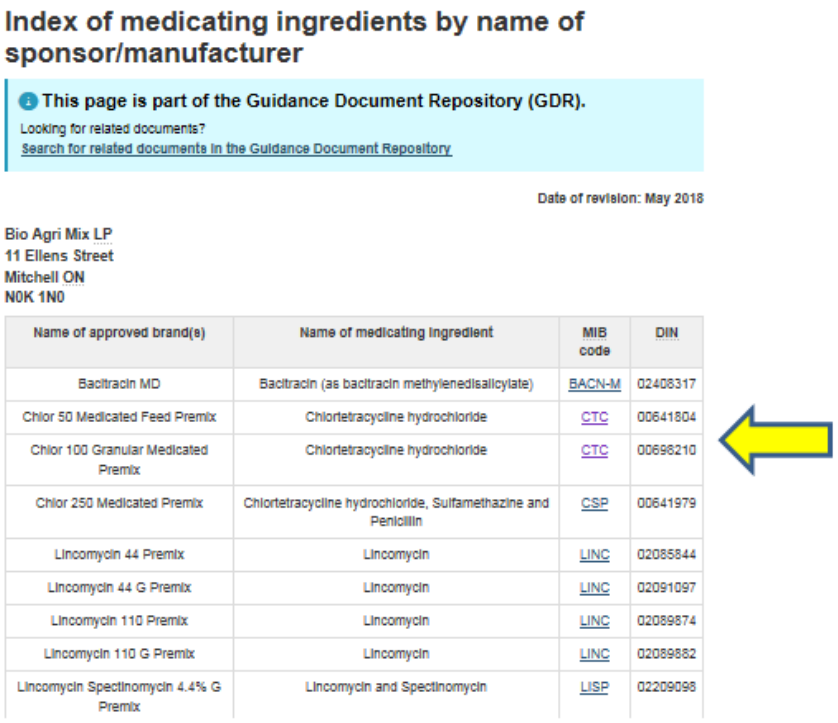
Chickens | Cattle | Fish
Turkeys | Sheep | Rabbits
Swine | Horses

Date of revision: October 2018

Medicating Ingredients approved for Cattle

Species (class)	Name of medicating ingredient	MIB code	Name of approved brand(s)	Status
Cattle	Decoquinate	DEC	Deccox 6% Premix	Over the counter
Beef	Chlortetracycline hydrochloride	CTC	1. Aureomycin 220 G Granular Medicated Premix 2. Chlor 50 Medicated Feed Premix 3. Chlor 100 Granular Medicated Premix 4. Deracin 22% Granular Premix	Veterinary prescription

To find CTC using:
Index of medicating ingredients by name of sponsor/manufacturer



Index of medicating ingredients by name of sponsor/manufacturer

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Looking for related documents?
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Date of revision: May 2018

Bio Agri Mix LP
11 Ellens Street
Mitchell ON
N0K 1N0

Name of approved brand(s)	Name of medicating ingredient	MIB code	DIN
Bacitracin MD	Bacitracin (as bacitracin methylenedisalicylate)	BACN-M	02408317
Chlor 50 Medicated Feed Premix	Chlortetracycline hydrochloride	CTC	00641804
Chlor 100 Granular Medicated Premix	Chlortetracycline hydrochloride	CTC	00698210
Chlor 250 Medicated Premix	Chlortetracycline hydrochloride, Sulfamethazine and Penicillin	CSP	00641979
Lincomycin 44 Premix	Lincomycin	LINC	02085844
Lincomycin 44 G Premix	Lincomycin	LINC	02091097
Lincomycin 110 Premix	Lincomycin	LINC	02089874
Lincomycin 110 G Premix	Lincomycin	LINC	02089882
Lincomycin Spectinomycin 4.4% G Premix	Lincomycin and Spectinomycin	LISP	02209098

Index contains:

- Name and address of manufacturer or drug proponent/sponsor
  - e.g., “Bio Agri Mix LP”
- Name of approved brand(s) listed under this particular manufacturer manufacturer/sponsor
  - e.g., “Chlor 50 Medicated Feed Premix”
- Name of medicating ingredient – “Chlortetracycline hydrochloride”
- MIB code and link to the specific MIB
- Drug Identification Number (DIN) of each product (i.e., dilute drug premix)

Chlortetracycline hydrochloride (CTC) – Medicating Ingredient Brochure

This page is part of the Guidance Document Repository (GDR).

Looking for related documents?
Search for related documents in the Guidance Document Repository

Status eterinary prescription required for app ved claims

Date of rev on: April 2018

Table of a roved species and claims

Approved livestock species	Approved claim(s) (abbreviated) [1]	Withdrawal time	Name of approved brand(s)
Beef and non-lactating dairy cattle	1. Aid in the prevention of foot rot	5 days (meat)	1. Aureomycin 220 G Granular Medicated Premix 2. Chlor 50 Medicated Feed Premix 3. Chlor 100 Granular Medicated Premix 4. Deracin 22% Granular Premix

After clicking on the CTC link for “Beef and non-lactating dairy cattle” :

Beef and non-lactating dairy cattle

Table of approved claims and brands

Approved claims	Name of approved brand(s)	Drug concentration in DIN product
Claim 1	1. Chlor 50 Medicated Feed Premix	Chlortetracycline (equivalent to chlortetracycline hydrochloride) at 110 g/kg
Claim 1	2. Aureomycin 220 G Granular Medicated Premix 3. Chlor 100 Granular Medicated Premix	Chlortetracycline hydrochloride at 220 g/kg
Claim 1	4. Deracin 22% Granular Premix	Chlortetracycline calcium complex equivalent to chlortetracycline hydrochloride at 220 g/kg

Claim 1

As an aid in the prevention of foot rot.

Level of medicating ingredient in a complete feed

At a level in the feed such that each animal will receive 0.22 mg of chlortetracycline hydrochloride per kg of body weight per day or 70 mg of chlortetracycline hydrochloride per head per day.

Directions for use in a complete feed

This livestock feed contains a medically important antibiotic. To reduce the development of antimicrobial resistance and maintain effectiveness, use this antibiotic prudently and for the shortest duration required to achieve the desired clinical outcome.

Feed this medicated feed continuously during the period animals are exposed to this disease.

Warning

1. Treated animals must not be slaughtered for use in food for at least 5 days after the latest treatment with this drug when fed at the recommended rate of 70 mg of chlortetracycline hydrochloride per head per day.
2. Do not administer to lactating dairy cattle.
3. When handling the product avoid inhalation, oral exposure, and direct contact with skin or eyes. (Required on premix and supplement labels only)
4. Keep out of reach of children. (Required on premix and supplement labels only)

Accepted Compatibilities

Nil

Page contains:

- The approved claim – “As an aid in the prevention of foot rot”
- The level of medicating ingredient in a complete feed – “At a level in the feed such that each animal will receive 0.22 mg of chlortetracycline hydrochloride per kg of body weight per day or 70 mg of chlortetracycline hydrochloride per head per day.”
- Directions for use including prudent use statement (because CTC is a medically important antimicrobial)
- Applicable Cautions and Warnings
- Accepted Compatibilities – In this case there are none

Our scenario: CMIB-compliant medicated feed

- Commercial feed facility will be manufacturing a “Beef Supplement” containing CTC as an aid in the prevention of foot rot.
- The manufactured medicated feed is to be labelled as per the MIB for CTC
- The medicated ‘Beef Supplement’ is to be mixed on-farm with the remaining feed ingredients at a rate of **25 kg of the medicated supplement per tonne of complete diet** including roughage
- The beef producer provides a **daily intake of 6 kg per/head/day** of the resulting medicated complete feed containing CTC to his beef cattle, which have an average body weight of 300 kg.
- How many kilograms of CTC product need to be added to the formulation of the medicated beef supplement?

Our scenario: CMIB-compliant medicated feed
Option 1: 70 mg of CTC per head per day

Dose of CTC (*from the MIB*): 70 mg/head/day
Complete diet **daily intake**: 6 kg/head/day
Inclusion rate of Supplement in complete diet: 0.025
(25 kg Supplement/1000 kg of complete diet)

$$mg\ CTC\ per\ day\ in\ complete\ diet\ = \frac{Dose\ per\ head}{Intake}$$

Ex. 70 mg/6 kg = 11.67 mg CTC per kg complete diet

$$mg\ CTC\ in\ Supplement = \frac{Amount\ CTC\ in\ complete\ diet}{Inclusion\ rate\ of\ Supplement}$$

Ex. 11.67 mg/0.025 = 467 mg of CTC per kg of supplement

Our scenario: CMIB-compliant medicated feed Option 1: 70 mg of CTC per head per day

If we go one step back, how do we determine how much CTC product needs to be added to the medicated supplement that is manufactured by the feed mill?

- The MIB for CTC lists products with 2 different concentrations:
  - Ex. Chlor 50 contains 110 g CTC/kg of premix, whereas Aureomycin 220G has 220 g CTC/kg of premix

- The medicated supplement for beef cattle has a concentration of **467 mg** of chlortetracycline hydrochloride **per kg**

- Then how much of the CTC product needs to be included in the formulation for the medicated beef premix that is manufactured by the feed mill?

Our scenario: CMIB-compliant medicated feed Option 1: 70 mg of CTC per head per day

$$kg\ of\ CTC\ product\ per\ 1000\ kg\ of\ Beef\ Suppl = \frac{mg\ of\ CTC\ per\ kg\ Suppl}{mg\ of\ CTC\ per\ kg\ of\ DIN\ Product} * 1000\ kg$$

To achieve 467 mg of CTC per kg of the Beef Supplement if the concentration of CTC product is 220 g/kg:

467 mg CTC per kg supplement/220,000 mg per kg CTC product * 1000 kg = 2.12 kg of CTC product

To achieve 467 mg of CTC per kg of the Beef Supplement if the concentration of CTC product is 110 g/kg:

467 mg of CTC per kg of Beef Supplement/110,000 mg per kg of CTC product *1000 kg = 4.25 kg of CTC product

Our scenario: CMIB-compliant medicated feed
Option 2: 0.22 mg CTC per kg BW per day

Average weight of cattle = 300 kg
Dose: 0.22 mg CTC per kg BW
Complete diet **daily intake**: 6 kg/head/day

$$mg\ CTC\ per\ head\ per\ day = Dose\ in\ mg/kg * BW\ in\ kg$$

Ex. 0.22 mg/kg BW * 300 kg = 0.66 mg CTC per head per day

$$mg\ CTC\ per\ kg\ of\ complete\ diet = \frac{mg\ CTC\ per\ head\ per\ day}{complete\ diet\ daily\ intake}$$

Ex. 66 mg of CTC per head per day ÷ 2 kg of feed per head per day = 33 mg of CTC per kg of complete diet

So what is the new target concentration of CTC in this medicated supplement?

- Using the same calculation as before:

$$mg\ CTC\ in\ Supplement = \frac{Amount\ CTC\ in\ complete\ diet}{Inclusion\ rate\ of\ Supplement}$$

Ex. 33 mg CTC in complete diet/0.025 = 1320 mg of CTC in the medicated supplement

The Alternative: Off Label Use

- If upon reviewing the MIB for a specific medication and the desired use, level or species is not indicated:
  - The veterinarian may issue an off label prescription (also referred to as Extra Label use)
  - The feed is subject to all the information and labelling requirements specified in Sections 5(g) and 26(7)of the Feeds Regulations
  - The prescription is required to be issued and on hand at the feed mill prior to manufacture of the feed.

Off-label use – a reminder

- When prescribing a medication off label the veterinarian can be considered responsible for any residue violations due to communication of inappropriate withdrawal times.
- Veterinarians are highly recommended to contact CgFARAD for guidance regarding off label withdrawal periods.

Writing scripts – a reminder

When writing a veterinary prescription, **the name** and **inclusion level** of the medicating ingredient must be on the prescription.

On all veterinary prescriptions, the veterinarian **MUST** indicate if brand substitution is allowable or ensure that the particular product that is indicated on the prescription is available at the commercial feed mill where the feed will be manufactured.

Failure to do so may result in prescriptions being returned.

As an example:

ANIMALS TO BE TREATED				
Species	Production Type	Age of Weight	Number of Animals	Location of Animals to be Treated

TREATMENT DURATION	
# Days:	
Feeding Start Date (MM/DD/YYY):	Feeding End Date (MM/DD/YYY):

MEDICATED FEED INFORMATION	
Type of Feed to be Medicated (Complete/Supplement/Macro):	
Name of Feed to be Medicated (if applicable):	Total Quantity of Medicated Feed Product (kg or tonnes):
Brand Substitution Acceptable? Yes ◯	No ◯

DIN product BRAND NAME *(Active ingredient, AI;)*	g of AI/kg of DIN product	g of AI/tonne complete feed	g of DIN product/ tonne of complete feed
1.			
2.			
3.			

Cautionary note on using the CMIB

- The CMIB is a useful resource for the manufacture and labelling of medicated feed, however it remains your responsibility to be aware of the conditions of use inherent for each medication. For example:
  - If using the CMIB and prescribing multiple medications to be combined into a single feed, be mindful of any conflicting information. In all cases where there are contradictions in the directions, warnings or cautions of the combined medications, the most conservative use and restrictions will apply.

Want to keep up to date on the CMIB?

- You can use the CFIA's Email Notification Services to get updates emailed directly to you
  - Visit the CFIA's main web page (www.inspection.gc.ca)
  - Go to very bottom right hand corner of the Agency's main web page and under the heading "Stay connected", click on "Email notifications"
  - Under the heading "Sign up for" select "Animal health and feed-related notifications" and enter your information and make your subscription selections
  - A listserv message is sent out to those signed up for the Animal health and feed-related notifications each time the CMIB is updated on the CFIA's website
    - New additions to the CMIB (DIN products, claims, new medicating ingredients)
    - Removal of DIN products from the CMIB
    - Changes to manufacturers/drug proponents

Do you have Questions about the CMIB?

- Submit your question to:

cfia.afd-daa.acia@canada.ca


WORKING TOGETHER TO PROMOTE THE RESPONSIBLE USE OF ANTIMICROBIALS IN ANIMALS
BACTERIA
Bacteria are everywhere – in the environment, in humans and in animals. Antimicrobial drugs (antibiotics) are used to treat and prevent bacterial infections in humans and animals. Any antimicrobial use can lead to resistance, but the inappropriate use speeds up the development and spread of RESISTANT BACTERIA.
RESISTANT BACTERIA
can spread between animals and humans through the food we eat or direct contact. Antimicrobial resistance is a serious public health problem AROUND THE WORLD.
WHAT CAN BE DONE?
We all have a role to play to promote the RESPONSIBLE USE of antimicrobials, and to protect human and animal health from the threat of antimicrobial resistance.
Learn more about the actions Health Canada is taking to ADDRESS THIS PROBLEM.
Health Canada
Santé Canada
Canada