Date of Approval: June 27, 2025

# FREEDOM OF INFORMATION (FOI) SUMMARY

## ORIGINAL ABBREVIATED NEW ANIMAL DRUG APPLICATION (ANADA)

ANADA 200-813

Clindamycin Hydrochloride Tablets

(clindamycin hydrochloride)

Dogs

Clindamycin Hydrochloride Tablets (for use in dogs only) are indicated for the treatment of infections caused by susceptible strains of the designated microorganisms in the specific conditions in dogs as listed below:

**Dogs: Skin infections (wounds and abscesses)** due to coagulase positive staphylococci (*Staphylococcus aureus* or *Staphylococcus intermedius*). **Deep wounds and abscesses** due to *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*. **Dental infections** due to *Staphylococcus aureus*, *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens.* **Osteomyelitis** due to *Staphylococcus aureus, Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*.

Sponsored by:

Felix Pharmaceuticals Pvt. Ltd.

## Executive Summary

Clindamycin Hydrochloride Tablets (clindamycin hydrochloride) (for use in dogs only) are indicated for the treatment of infections caused by susceptible strains of the designated microorganisms in the specific conditions in dogs as listed below:

**Dogs: Skin infections (wounds and abscesses)** due to coagulase positive staphylococci (*Staphylococcus aureus* or *Staphylococcus intermedius*). **Deep wounds and abscesses** due to *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*. **Dental infections** due to *Staphylococcus aureus*, *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens.* **Osteomyelitis** due to *Staphylococcus aureus, Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*.

The reference listed new animal drug (RLNAD) is Antirobe® (clindamycin hydrochloride capsules), sponsored by Zoetis Inc., under NADA 120-161.

## Bioequivalence

For this approval, FDA approved a suitability petition to allow the sponsor to submit an ANADA for a generic animal drug that differs in dosage form from the RLNAD. The change in dosage form from the RLNAD capsules to tablets was approved in a Suitability Petition dated April 7, 2021 (FDA-2021-P-0086).

The sponsor conducted one *in vivo* blood-level study in dogs to show that the 150 mg Clindamycin Hydrochloride Tablet is bioequivalent to the 150 mg Antirobe® capsule. No serious adverse events were reported during the study.

The sponsor conducted a comparative *in vitro* dissolution study for the additional product strengths. Based on the dissolution data, the 25 mg and 75 mg tablets qualified for a waiver from the requirement to perform separate *in vivo* bioequivalence studies (a biowaiver). FDA granted a biowaiver for these strengths.

## Conclusions

Based on the data submitted by the sponsor for the approval of Clindamycin Hydrochloride Tablets, FDA determined that the drug is safe and effective when used according to the label.

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## I. GENERAL INFORMATION

### A. File Number

ANADA 200-813

### B. Sponsor

Felix Pharmaceuticals Pvt. Ltd.
25-28 North Wall Quay
Dublin 1, Ireland

Drug Labeler Code: 086101

U.S. Agent Name and Address:

Sreejith Kurup
Felixvet Inc.
1300 NW Briarcliff Parkway
Suite 100
Kansas City, MO 64150

### C. Proprietary Name

Clindamycin Hydrochloride Tablets

### D. Drug Product Established Name

clindamycin hydrochloride

### E. Pharmacological Category

Antimicrobial

### F. Dosage Form

Tablets

### G. Amount of Active Ingredient

25 mg, 75 mg, and 150 mg

### H. How Supplied

25 mg tablets in bottles of 400 tablets
75 mg tablets in bottles of 200 tablets
150 mg tablets in bottles of 100 tablets

### I. Dispensing Status

Prescription (Rx)

## J. Dosage Regimen

**Dogs: Infected Wounds, Abscesses, and Dental Infections**

**Oral:** 2.5-15.0 mg/lb body weight every 12 hours

**Duration:** Treatment with Clindamycin Hydrochloride Tablets may be continued up to a maximum of 28 days if clinical judgement indicates. Treatment of acute infections should not be continued for more than three or four days if no response to therapy is seen.

**Dosage Schedule**

**Tablets**
**Clindamycin Hydrochloride Tablets 25 mg,** administer 1-6 tablets every 12 hours for each 10 pounds of body weight.
**Clindamycin Hydrochloride Tablets 75 mg,** administer 1-6 tablets every 12 hours for each 30 pounds of body weight.
**Clindamycin Hydrochloride Tablets 150 mg,** administer 1-6 tablets every 12 hours for each 60 pounds of body weight.

**Dogs: Osteomyelitis**

**Oral:** 5.0-15.0 mg/lb body weight every 12 hours

**Duration:** Treatment with Clindamycin Hydrochloride Tablets is recommended for a minimum of 28 days. Treatment should not be continued for longer than 28 days if no response to therapy is seen.

**Dosage Schedule**

**Tablets**
**Clindamycin Hydrochloride Tablets 25 mg,** administer 2-6 tablets every 12 hours for each 10 pounds of body weight.
**Clindamycin Hydrochloride Tablets 75 mg,** administer 2-6 tablets every 12 hours for each 30 pounds of body weight.
**Clindamycin Hydrochloride Tablets 150 mg,** administer 2-6 tablets every 12 hours for each 60 pounds of body weight.

## K. Route of Administration

Oral

## L. Species

Dogs

## M. Indication

Clindamycin Hydrochloride Tablets (for use in dogs only) are indicated for the treatment of infections caused by susceptible strains of the designated microorganisms in the specific conditions in dogs as listed below:

**Dogs: Skin infections (wounds and abscesses)** due to coagulase positive staphylococci (*Staphylococcus aureus* or *Staphylococcus intermedius*). **Deep wounds and abscesses** due to *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*. **Dental infections** due to *Staphylococcus aureus*, *Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens.* **Osteomyelitis** due to *Staphylococcus aureus, Bacteroides fragilis, Prevotella melaninogenicus, Fusobacterium necrophorum* and *Clostridium perfringens*.

### N. Reference Listed New Animal Drug (RLNAD)

Antirobe®; clindamycin hydrochloride capsules; NADA 120-161; Zoetis Inc.

## II. BIOEQUIVALENCE

The Federal Food, Drug, and Cosmetic Act (FD&C Act), as amended by the Generic Animal Drug and Patent Term Restoration Act (GADPTRA) of 1988, allows for an abbreviated new animal drug application (ANADA) to be submitted for a generic version of an approved new animal drug (RLNAD). The ANADA sponsor is required to show that the generic product is bioequivalent to the RLNAD, which has been shown to be safe and effective. Effectiveness, target animal safety and human food safety data (other than tissue residue data) are not required for approval of an ANADA. If bioequivalence is demonstrated through a clinical endpoint study in a food-producing animal, then a tissue residue study to establish the withdrawal period for the generic product is also required.

The sponsor submitted a suitability petition (FDA-2021-P-0086) requesting permission to submit an ANADA for a generic new animal drug that differed in dosage form from the RLNAD. The suitability petition proposed the dosage form to be tablets in place of the RLNAD capsules. This petition was approved on April 7, 2021, under 512(n)(3)(C) of the FD&C Act.

For this ANADA, one *in vivo* blood-level study was conducted to demonstrate product bioequivalence using the generic (clindamycin hydrochloride) 150 mg tablet and the RLNAD 150 mg (clindamycin hydrochloride capsule). The RLNAD is available in 25 mg, 75 mg, and 150 mg capsules. The *in vivo* blood-level study was conducted in 30 healthy, fasted dogs. The pivotal parameters to evaluate bioequivalence are the observed maximum plasma drug concentration ($C_{MAX}$) and area under the concentration-time curve (AUC) from time 0 to the last sampling time before the first unquantifiable concentration after $C_{MAX}$. Bioequivalence was demonstrated between the 150 mg (clindamycin hydrochloride capsule) and the 150 mg (clindamycin hydrochloride) tablet by the average bioequivalence approach as described in the Statistical Methods section below. A waiver from the requirement to demonstrate *in vivo* bioequivalence (biowaiver) for the generic 25 mg and 75 mg tablets was requested. Dissolution data was used to demonstrate that the generic 25 mg and 75 mg clindamycin hydrochloride tablets are comparable to the generic 150 mg tablet strength used in the *in vivo* blood-level bioequivalence study. Therefore, a biowaiver for the generic 25 mg and 75 mg (clindamycin hydrochloride) tablets was granted. The study information is summarized below.

## A. Blood-level Bioequivalence Study in Dogs

**Title**: Pivotal Bioequivalence Study of Antirobe® (clindamycin hydrochloride) Capsules and a Formulation of Generic Clindamycin Hydrochloride Tablets when Administered Orally to Dogs under Fasted Conditions. (Study No. CLNC-KC2-5822)

**Study Dates:** June 21, 2023 to March 25, 2024

**Study Locations:**

In-life phase: Ontario Canada

Bioanalytical testing: Telangana India

**Study Design:**

Objective: The objective of this study was to determine the comparative *in vivo* blood-level bioequivalence data for the generic 150 mg (clindamycin hydrochloride) tablet and the RLNAD 150 mg Antirobe® capsule in fasted dogs.

Study Animals: Thirty male dogs between the age of 6 months to 5 years and weighing 7.3 to 10.2 kg.

Experimental Design: A randomized, masked, two-period, two-sequence, single-dose crossover study conducted according to Good Laboratory Practice for Nonclinical Laboratory Studies.

Drug Administration: Each animal received 150 mg of either the generic or RLNAD clindamycin hydrochloride tablet or capsule according to their randomized treatment sequence (generic/RLNAD or RLNAD/generic).

Measurements and Observations: The plasma concentrations of clindamycin hydrochloride were measured using a validated bioanalytical method.

Pharmacokinetic parameters were determined for each animal individually in each period. Animal observations were made throughout the study for assessment of general health and adverse events.

**Statistical Method:**

The study was conducted as a randomized, masked, two-period, two-sequence, two-treatment, single-dose crossover design using 30 dogs with a 7-day washout. Appropriate randomization of animal to sequence and pen/treatment order was performed. Primary variables evaluated were $C_{MAX}$ and AUC. Time to maximum concentration ($T_{MAX}$) was summarized and evaluated clinically. Of the 60 possible pharmacokinetics profiles, 50 were complete due to 10 dosing failures. The dosing failures occurred unequally between sequences such that Sequence 1 was missing 23% (7/30) of the profiles while Sequence 2 was missing 10% (3/30). The dosing failures were otherwise balanced across periods and treatment.

A mixed-effect model was used to evaluate bioequivalence. The model included fixed effects of treatment, sequence, and period, and a random effect of subject nested within sequence. Prior to the analysis, $C_{MAX}$ and AUC were natural logarithm transformed. A statistically significant sequence effect was observed in the AUC model. An analysis of the Period 1 data in a parallel design approach did not meet the bioequivalence criteria. Since carryover effects were unlikely due to appropriate washout, further analyses were performed to evaluate the possibilities of a true sequence effect or a treatment by period interaction. Considering that the significant sequence effect could be caused by the unbalanced dosing failures between the two sequences, the average bioequivalence approach was applied to data from animals with complete data from both periods (complete cases) only, and the bioequivalence criteria were met because the back-transformed estimated upper and lower bounds of the pertinent 90% confidence interval for geometric mean ratios (generic/RLNAD) were contained within the acceptance limits of 0.80 to 1.25.

**Results:**

As seen in the table below, $C_{MAX}$ and AUC fall within the prescribed bounds (Table II.1). The mean values of $T_{MAX}$ obtained for the generic article and RLNAD were summarized.

**Table II.1. Bioequivalence Evaluation**

| Parameter | Generic Mean | RLNAD Mean | Ratio[◊] | Lower 90% CI | Upper 90% CI |
|---|---|---|---|---|---|
| AUC (ng/mL)*hour | 26243[†] | 25755[†] | 1.02 | 0.96 | 1.08 |
| $C_{MAX}$ (ng/mL) | 6875[†] | 6321[†] | 1.09 | 1.02 | 1.16 |
| $T_{MAX}$ (hours) (SD)[‡] | 0.60 (0.29)[‡] | 0.66 (0.30)[‡] | NE | NE | NE |

[†] Geometric mean
[‡] Arithmetic mean and standard deviation (SD)
[◊] Ratio = Test/Reference
CI = confidence interval
NE = not estimated

**Adverse Reactions:**

There were no serious adverse events reported during the study.

**Conclusion:**

The *in vivo* bioequivalence study demonstrated that the generic 150 mg (clindamycin hydrochloride) tablet and the RLNAD 150 mg Antirobe® (clindamycin hydrochloride capsule) are bioequivalent in dogs.

### B. Bioequivalence Waiver

A pivotal *in vivo* blood bioequivalence study was conducted using the 150 mg clindamycin hydrochloride tablet strength in dogs. A waiver from the requirement to perform *in vivo* bioequivalence studies (biowaiver) for the generic 25 mg and 75 mg clindamycin hydrochloride tablet strengths in dogs was requested. To qualify for a biowaiver for each of these product strengths, comparative *in vitro* dissolution studies were conducted to determine the dissolution profiles of the generic 25 mg, 75 mg, and 150 mg clindamycin.

Test conditions were as follows:

- Dissolution apparatus: USP Apparatus I
- Dissolution medium: Phosphate buffer, pH 6.8
- Dissolution medium volume: 900 mL
- Temperature: 37 °C
- Paddle speed: 100 rpm
- Number of vessels: 12
- Data points: 5, 10, 15, 20, and 30 minutes hydrochloride tablets.

The generic drug lot number used in the *in vivo* bioequivalence study was the same lot used to support the *in vitro* profile comparisons. Analytical method validation was required to ensure that the quantification of drug concentrations in all samples was accurate and precise.

To allow use of mean data, the percent coefficient of variation at the earlier time points (e.g., 15 minutes) should not be more than 20%, and at other time points should not be more than 10%. The percent coefficient of variation for all generic product profiles was within acceptable limits. Only one measurement should be considered after 85% dissolution of one of the products. The similarity factor (f2) should be greater than 50 to ensure sameness or equivalence of two profiles.

Study results demonstrate similar dissolution profiles for all comparisons. However, because of rapid dissolving characteristics (>85% in 15 minutes) in all strengths, a dissolution profile comparison using the f2 test is unnecessary. When comparative profiles between tablets do not require an f2 test because of rapid dissolution or when the f2 value is ≥50, the product strengths used in the comparison qualify for biowaiver. Therefore, a biowaiver for the 25 mg and 75 mg clindamycin hydrochloride tablets strengths is granted.

## III. HUMAN FOOD SAFETY

This drug is intended for use in dogs. Because this new animal drug is not intended for use in food-producing animals, CVM did not require data pertaining to drug residues in food (i.e., human food safety) for approval of this ANADA.

## IV. USER SAFETY

The product labeling contains the following information regarding safety to humans handling, administering, or exposed to Clindamycin Hydrochloride Tablets:

**Caution**
Federal law restricts this drug to use by or on the order of a licensed veterinarian.

**WARNINGS**

Keep out of reach of children. Not for human use.

Keep Clindamycin Hydrochloride Tablets in a secure location out of reach of dogs, cats, and other animals to prevent accidental ingestion or overdose.

## V. AGENCY CONCLUSIONS

The data submitted in support of this ANADA satisfy the requirements of section 512(c)(2) of the FD&C Act. The data demonstrate that Clindamycin Hydrochloride Tablets, when used according to the label, is safe and effective for the conditions of use in the General Information Section above.