INTERNATIONAL ELEPHANT FOUNDATION
Interim Report

TITLE OF THE PROJECT: Pharmacokinetics of rectally and orally administered levofloxacin in Asian elephants

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Project Start Date: Spring 2017
Project End Date: Spring 2018

Conservation needs:

The completion of this project is important to determine the pharmacokinetic characteristics of levofloxacin in this species. Although we have some point in time data for this medication based on clinical usage, a full study will allow recommendations on dosage, route, and frequency to be made as well as confirming that adequate levels are being maintained in the system for appropriate amounts of time.

This study will occur in two herds that are managed under human care at a two different facilities but will be applicable to Asian elephants globally. Data from this study may be extrapolated to African elephants until species specific studies can be performed.

The benefit of this study will be from the increased knowledge regarding this medication therefore improving clinical usage in this species.

The impact on elephant conservation will be from the ability to provide more evidence based medicine and from learning more about how these animals process medications.

Goals and Objectives:

The objective of this study is to determine the pharmacokinetics of levofloxacin after oral and rectal administration in Asian elephants. This will allow dosage recommendations to be made. The initial part of the study has started and completion of the full study will achieve our overall objective.

Activities that differ from original proposal:

The duration in between the two parts of the first pilot study will end up being slightly longer in duration due to circumstances unrelated to the study.

Conservation Outcomes:

This project will increase the scientific knowledge and be applicable to animals both in human care and in the wild. Utilizing evidence based medicine can provide more specific treatments and minimize uncertainty in effectiveness of treatment. This is vitally important as we strive to provide the best care that we can for our patients.

Impact on humans and elephants:

While this study does not necessarily have an impact on the human population, it can be applied to elephants globally either directly (Asian elephants) or through extrapolation (African elephants).

Problems:

At this time, no problems have been discovered

Successful project:

The project is just now underway but so far the data from the first part of the pilot study is on point with expectations. The predicted oral dose has been confirmed and that dose will be utilized in the full study.

Next Step:

The next step for this project is to complete the pilot study and then move to the full pharmacokinetic study.

Human interest story:

With the alarming decline in populations of elephants in the wild, getting the chance to work with these amazing animals is more important and special than ever. The connection you make with them, the trust you earn from them, the experience that you get with them, and the knowledge that you gain from all of that is something that stays with a person forever. In this instance, we are able to gather information from just a few blood samples that will lead to more specific, more evidence based medicine. That is something that will continue to advance elephant medicine and help us continue to provide the best care that we can for our patients both in human care and in the wild.

Long and short summary:

The first part of the initial pilot study has been completed and shows promising results for oral administration of levofloxacin in Asian elephants. Appropriate concentrations were achieved in the blood that should be adequate for bacterial pathogens that are commonly encountered.

Organizations associated:

Tulsa Zoo – primary investigators and providing the remaining funding for this project

Ringling Brothers, Center for Elephant Conservation – co-investigators, home of some of the elephants included in this project

Endangered Ark Foundation – home of some of the elephants included in this project

North Carolina State University, Clinical Pharmacology – co-investigator, sample analysis

Financial Report:

All supplies and initial testing have come out of the Tulsa Zoo provided funds so far. As we needed to utilize the Tulsa Zoo funds in the 2016-2017 fiscal year and have not started the full study yet, none of the IEF funds have been utilized at this time.

Images: attached

Video: attached

Publication:

We intend to submit a manuscript to a peer-reviewed journal, the Journal of Zoo and Wildlife Medicine.

Social Media:

There are no social media sites directly associated with this project.