WINN FELINE FOUNDATION
For the Health and Well-being of All Cats

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MEFLOQUINE AS A POTENTIAL TREATMENT FOR FIP

PROJECT STUDY: Determining the pharmacokinetic profile of mefloquine in clinically normal cats as a preliminary in-vivo study towards a potential treatment for feline infectious peritonitis (FIP).

Principal Investigators: Associate Professor Merran Govendir, Professor Jacqui Norris, Dr. Benjamin Kimble, Dr. Jane Yu; University of Sydney, Australia.

Final report summary, W19-027

Feline infectious peritonitis (FIP) is a fatal immune mediated disease induced by feline coronavirus in domestic and wild cats. Treatment options are limited, with a median life expectancy varying from days to weeks for the effusive form, weeks to months for the non- effusive form, and rarely, years.

Mefloquine is an anti-malarial drug prophylactic and treatment for people. It has been demonstrated that mefloquine substantially reduced the viral load of FIPV in infected Crandell Feline Kidney cells without cytotoxic effects. Its inhibition in cytopathic effect and viral replication at low concentrations supports further investigation of this drug as a potential antiviral therapeutic agent for the cat with FIP.

The investigators' previous project that initiated investigated mefloquine as a potential therapy for FIPV in cats (as W16-023) developed an in-vitro model to determine the extent and rate of hepatic clearance (Cl) of mefloquine. W16-023 demonstrated that mefloquine undergoes some phase I hepatic metabolism but not phase II hepatic metabolism, that is conjugative glucuronidation, when incubated with feline hepatic microsomes. The overall outcome for W16-023 was that there was no evidence to suggest that mefloquine will significantly accumulate when administered to the clinically normal cat.

The aim of W19-027 was to obtain some pharmacokinetic (PK) information on mefloquine when administered orally to clinically normal cats so that a dose rate and dose frequency can be identified that can ultimately be delivered to cats infected with FIPV.

This project, W19-027 investigated the pharmacokinetic profile, haematological and biochemical analyte and physiological responses of mefloquine in clinically normal cats when dosed with a mefloquine tablet at 62.5 mg /cat, twice weekly over a period of two weeks. Haematology results were unremarkable in all six cats at all time points. In summary, this study demonstrated favourable pharmacokinetic properties of mefloquine in clinically normal cats. Increase in SDMA was identified with 4 doses of mefloquine, but no elevation in creatinine was observed.

Looking at the mefloquine concentrations after the 96, 240 and 160 hr mefloquine dosing, suggests that mefloquine is better absorbed when administered with food. However, this study cannot confirm this observation. To confirm this, mefloquine concentrations need to be confirmed in cats when administered with vs without food.

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Other than two cats vomiting in the first week of the study, no other adverse effects were observed in the subjects.

This suggests that the current dosage of 62.5 mg/ mature cat twice weekly may well be efficacious against the virus, however the next stage would be to undertake clinical trials of mefloquine in cats infected with FIPV. Further studies on therapeutic effects of mefloquine in cats with FIP are needed to determine its therapeutic advantage.

Publications: A manuscript is in preparation for publication.

Future studies: W20-005 with Professor Norris and Associate Professor Govendir was just approved for funding: Determining the clinical efficacy of mefloquine for treatment of naturally occurring feline infectious peritonitis – stage 1.

Summary prepared for Winn Feline Foundation © 2020