

# PHYTOMEDECINE FOR SIFAKA



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## Background:

Lemurs consume human medicinal plants in their natural habitat (n=47; 73%). However, the therapeutic activities of those plants in lemurs are not yet known.

Previous study allowed to identify a dewormer plant that can be used to treat parasitic infestation which is one of the most common diseases of Sifaka in captivity.

## Statistical:

What are the factors that influence the recovery rate from parasitic infection in Sifaka?

## Mechanistic:

How does the dosage of dewormer phytomedicine can affect recovery rate from parasitic infection in Sifaka

## STATISTICAL QUESTION

What are the factors that influence the parasitism recovery rate during administration of dewormer phytomedecine in Sifaka?

- Response variable:

Number of eliminated eggs

- Predictor variables:

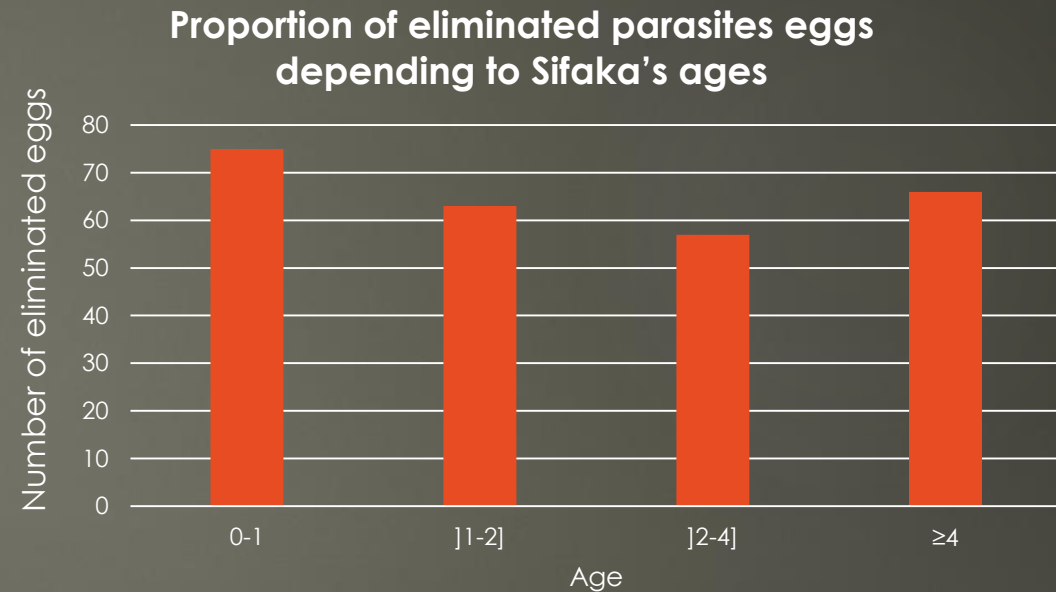
Age, Sex, weight, dose, location, frequency of administration, time of administration

- Distribution: Poisson
- Link: Natural log
- Hypothesis:

Lemur parasitism recovery rate is related to the antiparasitic plant dosage, plant species, administration frequency of the plant). We anticipate no significant random effect of age, sex, lemur weight.

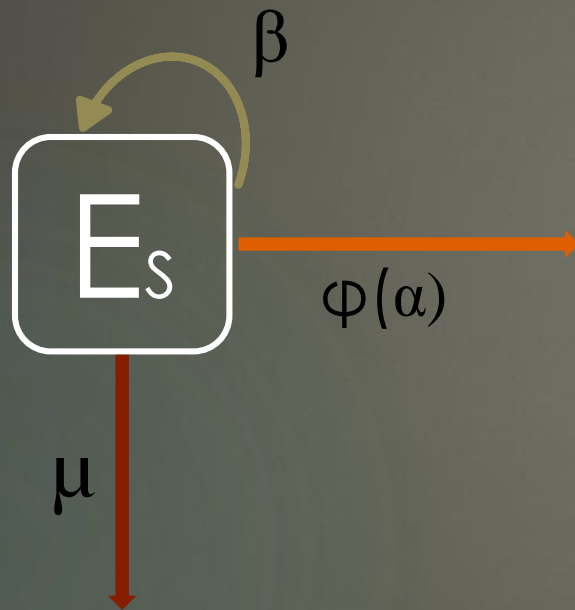
- R code:

```
glmer(recovery_rate~age+sex+weight+dose+location+administration_time+administration_frequency,  
family=poisson)
```



## MECHANISTIC QUESTION

How does the dosage of dewormer phytomedicine can affect the parasitism recovery rate in Sifaka?



$$\frac{dE_s}{dt} = \alpha E_s - \mu E_s - \varphi(\beta) E_s$$

### States

$E_s$ : Eggs present in Sifaka's fecal sample

### Processes

- $\beta$ : Eggs multiplication rate;
- $\mu$ : Eggs elimination rate;
- $\Phi(\beta)$ : Eggs elimination rate in function of dewormer phytomedicine doses.

## Next steps:

- Collect lemur fecal samples in captivity and analyze it in order to determine the main parasites that infect them.
- Choose one dewormer plant among they have eaten in their natural habitat and may have effect to them according to biochemistry scientific articles.
- Asking for a permit to collect plants, conceive phytomedecine and experiment it.

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