

Investigating the use of medicinal plants by orangutans (genus *Pongo* Lacépède, 1799: Hominidae) to combat parasitic infection

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Introduction

All species of orangutans (genus *Pongo* Lacépède, 1799: Hominidae) are endangered. The study of the epidemiology of orangutan parasitic infection is required for successful conservation planning and wildlife management of the remaining fragmented populations. For example, the health and reproductive capacity of reintroduced orangutans can be threatened by infection with alien parasite species present in their new environment. Zoopharmacognosy is the term that describes the behaviour of wild animals using specific wild plants with medicinal effects. Orangutans have been observed to ingest plants with potential medicinal properties and unlike other plants ingested, their proportion in the orangutans diet does not relate to their availability in the environment. Inclusion of some of these species in the diet of orangutans at Singapore Zoo has also resulted in a decrease in their parasite levels. This project aims to evaluate the hypothesis that the eating of specific plants, or their parts, by orangutans corresponds to a decrease in parasite load.

Materials and methods

This research is the main part of a postdoctoral study that just began and utilises data and samples that have been gathered by the Orangutan Health Project in Sumatra since 1999. Active plant compounds will be tested on selected parasite cultures, using in vivo and in vitro models. Focus will be on protozoa, in particular *Entamoeba* spp., *Giardia* spp., *Cryptosporidium* spp. and microsporidia which have been previously identified in orangutan faecal samples. Molecular techniques will also be used to identify *Entamoeba* spp. to species level and genotyping of the *Cryptosporidium* species will be carried out.



Orangutan at Bukit Lawing, one of the study sites. Picture taken from Orangutan Health Project facebook page

Expected applications of findings

It is anticipated that identifying antiparasitic plants utilised by orangutans will:

1. Improve the knowledge of plant species required by wild and captive orangutans
2. Aid in teaching possibly reintroduced orangutans to utilise these plants, reducing their parasite levels in their new environments
3. Possibly identify plant compounds with pharmaceutical medicinal purposes for humans

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