Prevalence of selected infectious diseases in Samoan dogs

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Abstract

Samoa has a tropical island climate ideally suited to many infectious diseases, and vectors for some infectious diseases are known to be present. Dogs are very commonly owned in Samoa with 88% of households owning an average of two dogs. Many canine infectious diseases are zoonotic and there is limited preventative medicine available for dogs in Samoa. There are very few studies into the presence of zoonotic pathogens in Samoa or other South Pacific islands, and the role of dogs as a reservoir for zoonotic diseases is unknown.

The prevalence of selected infectious diseases was evaluated in 242 dogs undergoing surgical sterilisation in Samoa in July 2010 and August 2011. Data were obtained from dogs' owners by interview, including age, environment and any previous preventative medication. Serum and faecal samples were collected, and the skin examined for external parasites. Seroprevalence of *Leishmania infantum, Anaplasma phagocytophilum, Ehrlichia canis*, *Borrelia burgdorferi* and *Dirofilaria immitis* were assessed using point of care qualitative ELISA assays. Faecal flotation was performed on fresh faecal samples to screen for intestinal parasites. Ninety-three faecal samples were also tested for *Giardia* and *Cryptosporidium* spp.

The median age of dogs was one year, with a range of four months to eight years and 73.3% were male. The vast majority of dogs were owned, the remaining were stray animals. Prevalence of *D. immitis* was 46.8% and *A. phagocytophilum* seroprevalence was 8.4%. All serum samples tested negative for *E. canis, B. burgdorferi* and *L. infantum*. Prevalence of hookworm was 92.6%. *Trichuris vulpis*, *Dipylidium caninum*, *Toxocara canis* and *Capillaria* spp. were also detected. Prevalence of *Giardia* spp. was 29.0% while no *Cryptosporidium* was detected. Fleas were found on 83.7% of the dogs, ticks on 42.1% and lice on 8.1%. Identified ticks were *Rhipicephalus sanguineus*, with no *Ixodes* spp. found.

The results indicate a very high prevalence of hookworm, *D. immitis,* and external parasites in Samoan dogs. This study provides valuable information on canine health and suggests dogs could play a role in the spread of some zoonoses in Samoa. Further studies are required to review the public health implications of this study.

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This study design was approved by the Massey University Animal Ethics Committee.

Table of contents

List of figures and tables

List of abbreviations

The following abbreviations are used within the main text and are defined in full when first used.

AHS	American Heartworm Society
AIDS	Acquired immune deficiency syndrome
APS	Animal Protection Society of Samoa
BVSc	Bachelor of Veterinary Science
CGA	Canine granulocytotrophic anaplasmosis
CLM	Cutaneous larva migrans
CME	Canine monocytotropic ehrlichiosis
ELISA	Enzyme-linked immunosorbent assay
HDU	Heartworm development units
HGA	Human granulocytic anaplasmosis
HrCLM	Hookworm-related cutaneous larva migrans
ICAM	International Companion Animal Management Coalition
IFA	Immunofluorescent antibody
L1	Stage 1 larvae
L2	Stage 2 larvae
L3	Stage 3 larvae
L4	Stage 4 larvae
OLM	Ocular larva migrans
PCR	Polymerase chain reaction
PCR-RFLP	Polymerase chain reaction-restriction fragment length polymorphism
VLM	Visceral larva migrans
WB	Western immunoblotting
ZSCT	Zinc sulphate centrifugation test