ABSTRACT

The dog (Canis familiaris) is raised by humans for many reasons including companionship, hunting aids, protection, shepherding, and for use as laboratory animals. However, dogs have been implicated to play an important role in the transmission of zoonotic parasites and recognized as being a significant public health problem worldwide, and especially in third world countries and communities. Dogs are the definitive host of cestodes of the family Taeniidae which are transmitted to a wide range of intermediate host species where they cause echinococcosis, cysticercosis or coenurosis. Cystic echinococcosis (CE) is a global zoonotic disease caused by the larval stage of the canid tapeworm Echinococcus granulosus sensu lato (s.l). CE has a worldwide distribution and is of public health importance in areas where extensive livestock farming is practiced, it is an emerging or re-emerging disease in many parts of the world with a particular impact in developing countries. At least 2 – 3 million people are affected by CE, where it causes significant morbidity. The infection in the definitive host plays an important role in the transmission dynamics of the disease. It has become increasingly important to re-evaluate the epidemiological situation of the parasite in dogs in order to determine relative risk factors for CE in endemic communities. The proposed study will determine the molecular epidemiology of E. granulosus and Taenia species in dogs from CE endemic areas. It will involve collection of faecal specimen in two different seasons (wet and dry) from dogs in Turkana, Meru, Isiolo, Samburu, Maasailand (Kitengela, and Maasi Mara) areas. Taeniids eggs will be isolated using Zinc Chloride flotation method and examined microscopically to determine the prevalence and distribution of taeniids and other intestinal parasites in dogs. Taeniid eggs will lysed in Sodium hydroxide and subjected to nested PCR targeting the NADH dehydrogenase subunit 1 gene followed by Restriction Fragment Length Polymorphism (RFLP) for E. granulosus s.l species identification. Multiplex PCR will be used to differentiate E. granulosus s.l and Taenia species eggs. Haplotypes will be determined by a nested PCR of the Cytochrome C oxidase subunit I gene and sequencing. The study will also determine the risks factors posed by dogs in the transmission of CE in humans and livestock. The results from this study will help us to understand the epidemiology, and pave way for development of disease surveillance and control programs for cystic echinococcosis.