

Abstract

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Determination of the detection time limit of blood meal host DNA in a tick, *Rhipicephalus (Boophilus)*, post feeding.

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Abstract:

The tick genus, *Rhipicephalus (Boophilus)*, is a common hematophagous parasite found feeding on animals. This study examined the extent to which host DNA in a blood meal in *Rhipicephalus*, can be identified post feeding using a cytochrome b polymerase chain reaction (PCR) assay. Female adult ticks (0.2 and 0.25 grams) were collected from cows and divided into 2 groups, one group was kept alive so as to analyse DNA degradation due to digestion and the other group was euthanized to analyse degradation due to decomposition. Morphological changes of the ticks were tracked and the presence/absence of cow DNA was analysed over time. Live ticks were analysed daily until they died and the dead ticks were analysed up to 290 days post feeding (PF). The ticks' gut contents were placed on Whatman® filter paper and dried before Chelex® DNA extraction. A 561 base pair region on the cytochrome b gene of the cow mitochondrial DNA was amplified and PCR products were visualized using agarose gel electrophoresis. Cow DNA was detected in the live ticks up to day 23 PF, however, probability of successful detection went down to at least 33% after day 15 PF. The live ticks started dying from day 40 PF and the last one died 52 days PF. Cow DNA was detected with bright bands in the dead ticks from day 1 PF to day 290 PF which is when the last sample was run, so the detection limit of DNA in dead ticks could not be determined. The persistence of host DNA in ticks showed the utility of ticks in forensic investigations. The methods used in this study can be used in forensic acarology to identify the host species of an arthropod when it is found at a crime scene.

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Biography:

Tanatswa Gara is a recent graduate from University of Zimbabwe where she studied BSc Honours in Forensic Science and was awarded a first class degree. She is currently working in a research laboratory at Africa University which is carrying out some highly specialized work on malaria and mosquitoes. This includes capturing mosquitoes from malaria endemic areas, identifying them morphologically and also carrying out various molecular analyses on the mosquitoes. She has also undergone several training workshops for molecular work from CDC experts.