

Calves in Kenya free from tick-borne diseases were treated prophylactically against tick-borne diseases with 40% (w/v) injections of oxytetracycline and phenamidine isothionate and infested twice by adults of *Rhipicephalus appendiculatus* Neum. from a disease-free laboratory stock. Mono- and diphasic temperature rises were observed during primary and secondary exposures, respectively, with the peak occurring when the ticks were completing engorgement. However, when infested for a 2nd time, the 1st rise in calf temperature occurred well before repletion and was associated with hypersensitivity. The feeding performance, viability and fecundity of female ticks were impaired during the 2nd exposure.