Title: Establishment of a multi-acaricide resistant reference tick strain (IVRI-V) of *Rhipicephalus microplus*

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Establishment of a multi-acaricide resistant reference tick strain (IVRI-V) of *Rhipicephalus microplus*

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ABSTRACT

Tick-borne diseases is a global threat and tick resistance to commonly used acaricides is a growing problem, thus calling for improved resistance monitoring tools. To aid in monitoring of resistance in field tick populations, a resistant colony of *Rhipicephalus microplus* was characterized with the aim to establish a reference multi-acaricide resistant tick strain. Using a standardized adult immersion test, the Lethal Concentration$(LC)_{50}$ values for deltamethrin, cypermethrin, fenvalerate and diazinon against the laboratory selected resistant tick (LSRT) strain were determined as 306.7ppm, 2776.9ppm, 30262.1ppm and 9458.7 ppm. Relative to the susceptible IVRI-I tick strain, the LSRT strain showed 4.78- and 5.84-fold increases in activity of esterases, a 6-fold increase for