Genetic diversity of *Theileria parva* strains in Uganda: Implications for Muguga cocktail vaccine efficacy in ECF control

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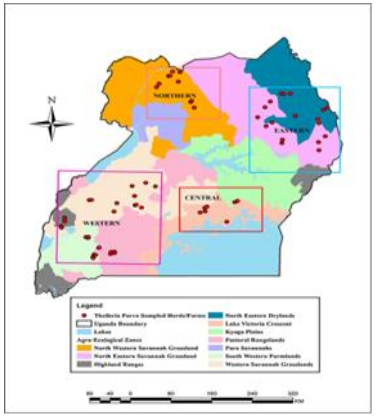
Introduction: ECF causes high mortality (up to 100%) among exotic and crossbred cattle impeding the development of the dairy industry and poverty reduction among smallholder dairy farmers. ECF control depends on acaricides to kill ticks. Prolonged acaricide use has resulted into environmental contamination and emergence of acaricide resistant ticks (Vudriko et al 2016).

Vaccine induced immunity

Muguga cocktail vaccine only induces immunity for Kiambu 5, Serengeti transformed & Muguga *T. parva* strains. Yet, studies by Muwanika et al., (2015) have identified strains in Uganda that are genetically different from the three strains in Muguga vaccine. Since vaccines induce production of strain specific antibodies, Muguga vaccine can not protect against some Uganda strains.

Genetic differentiation of *T. parva* strains in Uganda



N = 78	Western	Northern	Central	Eastern
Western (n = 30)	-	0.001**	0.001**	0.001**
Northern (n = 19)	0.154	-	0.009**	0.020*
Central (n = 11)	0.160	0.085	-	0.002**
Eastern (n = 18)	0.173	0.048	0.101	-

Above diagonal: - p values for significant differences between populations, ** highly significant, * significant. Below diagonal:- Wrights F_{ST} values indicating differences between populations

Conclusion: Muguga cocktail vaccine doesn't induce cross protection immunity for all the *T. parva* genetic strains in Uganda's AEZs

Recommendation: Development of a vaccine that incorporates local *T. parva* genetic strains

References: 1. Muwanika, V., Kabi F., Masembe C. (2015) Population genetic structure of Theileria parva field isolates from indigenous cattle populations of Uganda. Ticks Tick-borne Dis.

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