Epidemiology of brucellosis at the human-livestock interface in Uganda

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BUiLD Boosting Uganda's Investment in Livestock Development

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Introduction

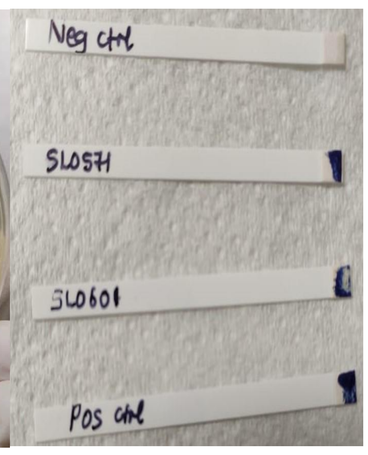
Brucellosis is a major food borne and occupational zoonosis; and a livestock production constraint in Uganda. Comprehensive knowledge of its epidemiology is vital for its progressive control and eradication from endemic areas.

Aim of the study is to determine: 1. The seroprevalence of anti-*Brucella* antibodies and exposure factors in both livestock and slaughterhouse workers at the point of slaughter; 2. The circulating species, their origin and phylogeny and 3. Resistance to first line antibiotics

Methods

Species	Sample type	# Samples collected (%)	Preliminary tests
Cattle	Blood for serum, Lymph nodes, Udder and testicular tissue, spleen	893 (>100)	Standard RBT, Culture tissues from +ve reactors, Biochemical testing of isolates, archive presumptive colonies
Shoats	As above	937(>100)	Modified RBT + other procedures as above
Swine	As above	579/695(83.3)	Standard RBT + other Procedures as above
Human	Whole blood, Serum	335/461(72.7)	Standard RBT, Culture of blood from +ve reactors + *other procedures as above*

Findings



Serology results		
Species	#Samples	# Positive (%)
Cattle	893	52 (5.8)
Goats	728	68 (9.3)
Sheep	198	16 (8.1)
Swine	579	52 (8.9)
Human	335	21 (6.2)

Biochemical profile and district of origin of isolates									
	CL0081	CL0184	CT0289	ST0409	ST0571	SL0601	SL0891	SL0892	CT0887
Urease	+	+	+	+	+	+	ND	ND	ND
Glucose	—	—	—	—	ND	ND	ND	ND	ND
Nitrate	+	+	+	+	ND	ND	ND	ND	ND
Oxidase	+	+	+	+	+	+	+	+	+
Catalase	+	+	+	+	+	+	+	+	+
H_2S	—	—	—	—	ND	ND	ND	ND	ND
Citrate	—	—	—	—	ND	ND	ND	ND	ND
Methyl red	—	—	—	—	ND	ND	ND	ND	ND
Animal Spp	Cattle	Cattle	Cattle	Goat	Goat	Goat	Goat	Goat	Cattle
District	Kotido	Otuke	Amudat	Kabong	Mbarara	UD	Kyankwanzi	Mbarara	Gomba

Conclusions

- Cattle and shoats seem to play a major role in the epidemiological cycle of brucellosis compared to swine
- All regions are affected
- There is occupational exposure to *Brucella* at the point of slaughter → Occupational safety implications

Limitations

- Tissue deterioration (time btn collection and culture)
- Hygiene→Sample contamination

No	Course
1	QGIS
2	Data analysis with R
3	Sanger sequencing
4	Systematic literature review
5	Scientific communication
6	Molecular methods, genomics and bioinformatics for infectious diseases epidemiology
7	GIS with R
8	Ethics in research
9	Gender and research

Contribution to Uganda's livestock development agenda

- Sound control strategies based on the epidemiological context will lead to reduction of production losses → ↑Food and nutritional security, household incomes
- Increased farm offtake → increased livestock contribution to GDP
- Improved occupational and consumer safety

Capacity building of the PhD fellow under BUILD

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