

ABSTRACT

Background: Treatment of bovine mastitis (BM) is highly expensive necessitating better and affordable control strategies. Synergy of plant extracts against microbes associated with BM stand unexploited. Therefore, this study sought to evaluate the sensitivity of major bovine mastitis bacteria- *Staphylococcus aureus* and *Escherichia coli* to combination of two traditional herbal plants, garlic and neem, widely used in East Africa.

Methods: Maceration and soxhlet processes were used to obtain crude ethanolic extracts of neem extracts (NE) and garlic (GE) respectively. The extracts were used to determine Minimum Inhibition Concentration (MIC) against test pathogens. Synergy was investigated by combining the two extracts at different concentrations and determining colony forming units per liquid medium (CFU/ml) using turbidity as a measure of inoculum growth.

Results: NE was effective against *S. aureus* at 200 μ g/ml and 100 μ g/ml (average zone of inhibitions were 11 \pm 0.5774 mm and 10 \pm 0.5774 mm respectively). *E. coli* was resistant to NE. GE was effective against *S. aureus* at 200 μ l/ml and 100 μ l/ml (average zones of inhibition were 14 \pm 0.8819 mm and 12 \pm 0.8819 mm respectively). GE was effective against *E. coli* only at 200 μ l/ml with an average zone of inhibition of 11 \pm 0.5774 mm.

Conclusions: There was synergy when garlic MIC was combined with NE MIC. Increase in concentration of GE above its MIC increased the rate of decrease of the CFU. No significant change was shown when NE concentration was increased above its MIC. The combination of NE and GE can have additive effect in treatment *S. aureus* mastitis while GE can supplement NE resistance.