

**Studies on the Use of Herbs to Preserve Meat and Milk among the  
Pastoral Communities of West Pokot in Kenya**

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## ABSTRACT

The pastoral communities of West Pokot have been using herbs to preserve both meat and milk throughout the ages. These naturally occurring herbs are gaining popularity as the chemical preservatives become less acceptable among consumers due to health concerns. The purpose of this study therefore, was to determine the preservative potential of herbs used by the pastoralists of West Pokot in the preservation of meat, milk and their products.

The study involved collection and identification of samples using a structured questionnaire. Water, methanol and chloroform extracts were obtained, from which, antimicrobial, antioxidant, phytochemical and toxicity tests were performed on each of the herbs. The quality changes during preservation of milk treated with the herb *Ozoroa insignis* Del was analyzed for Titratable acidity, pH, plate and LAB count within 14 Days of storage. The quality changes in meat were assessed by making pork sausages and analyzing for total viable count (TVC), *S. aureus* and *E. coli*, TVB-N and rancidity tests over a period of 14 days. Samples were stored at both 4°C and 25°C.

The phytochemicals mostly found in the identified herbs, *Ozoroa insignis* Del, *Senna didymobotrya* Fresen Irwin and Barneby, *Tamarindus indicus* L and *Ziziphus abyssinica* include, reducing compounds, sterols and steroids, alkaloids, saponins, flavonoids and condensed tannins.

Methanol and chloroform extracts of *Ozoroa insignis* Del and *Senna didymobotrya* Fresen Irwin and Barneby had antimicrobial activity against *E. coli* and *P. aeruginosa*, while water and methanol extracts of *Tamarindus indicus* L had

antimicrobial activity against all the test microorganisms. *Ziziphus abyssinica* inhibited *E. coli* and *S. aureus* only. *Tamarindus indica* L, *Ozoroa insignis* Del, *Senna didymobotrya* Fresen Irwin and Barneby and *Ziziphus abyssinica* had antioxidant capacity reducing DPPH by 86%, 88%, 92%, and 96% respectively. Milk incorporated which *Ozoroa insignis* Del had its Percentage acidity stabilized at 2.8% and the pH stabilized at 3.8. All the herbs were unable to preserve sausages beyond the third day at 25°C, while at 4°C the sausages incorporated with the aqueous extracts of *Tamarindus indica* preserved for up to fifteen days. Those with the aqueous extracts of *Ziziphus abyssinica* at 4°C were able to preserve for 10 days. *Tamarindus indica* was a strong antimicrobial agent while *Ziziphus abyssinica* was a strong antioxidant. These results indicated that the herbs had the potential to preserve meat sausages.

Further research on quantitative analysis of the phytochemicals needs to be done. A product incorporating the related identified herbs such as *Ziziphus abyssinica*, *Tamarindus indica* and *Ozoroa insignis* Del, *Senna didymobotrya* Fresen Irwin and Barneby should be developed