Title: The Antimicrobial Properties of Garlic Against the Common Food Spoiling Bacteria *Escherichia Coli*

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Abstract

Garlic is known to have numerous beneficial effects for human health. However, little information is known on its mechanism of controlling microorganisms that cause human epidemics. This study aims at evaluating the use of garlic as a natural preservative and its inhibitory effect against common food spoiling pathogen *Escherichia coli.* The freshly collected garlic were chopped into small pieces, dried for a week and blended. 1.5g, 2g, 2.5g and 3g were soaked in equal volume of 15ml of distilled water and ethanol as a solvent in a 250 ml sterile conical flask and shaken vigorously. The crude extract was filtered and kept at 4^{o}C. *E. coli* was obtained from fecal sample from pigs in the University farm through serial dilution and spread plate methods in sterile MacConkey agar. An antibacterial activity of the individual extract was tested on the MacConkey agar by disc diffusion method. The inoculums were spread evenly over the entire surface by swabbing in the plates. Inoculated plates were allowed to dry for 10 minutes before placing the discs. Sterile paper discs (diameter 10mm) will be impregnated with different concentration of the extracts :(1.5g; 2g, 2.5g and 3g) were soaked in equal volume of 15ml of distilled water and ethanol as a solvent in a 250 ml sterile conical flask. This procedure was done three times. The plates were incubated at 37^{0}C 24hours. The zone of inhibition was then measured. Minimal inhibitory concentration was carried out by agar dilution method where concentrations of garlic extract were prepared by using dimethyl sulfoxide in the ratio of 1:1 and was diluted with equal amount of phosphate buffer saline pH of 7.0. Data was analyzed using one-way Analysis of Variance in SPSS software. This study provided an alternative natural way of food preservation against *E. coli* amongst the communities within and out of Embu County. It is therefore suggest that the garlic extracts can be used as potential source of natural antimicrobial compound which if applied to bakery products before it is used for commercialization in the form of nutraceutical food it will prevent proliferation of spoiling microorganisms.