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## **EFFECT OF CARVACROL ON FOODBORNE MICROORGANISMS ISOLATED FROM PORK**

The Centre for Disease Control and Prevention annually records high figures of foodborne illnesses. The World Health Organization has predicted that the human population is expected to increase to 10 million by 2050 hence, several hands are needed on deck to prevent foodborne illnesses caused by foodborne microorganisms. The issue of public health and food safety has been on the rise as far as antimicrobial resistance is concerned. Also, consumer perception of chemical preservatives as toxic and carcinogenic has sparked the interest in the use of natural antimicrobials to inhibit foodborne pathogens and to extend the shelf-life of food. Nonetheless, there aren't extensive research done focusing on the use of plant volatile oils to inhibit foodborne microorganisms isolated from Pork.

Six dominant microorganisms were isolated from Pork using Chromocult, Centrimide, MRS and TGE Agar medium. Maintenance of the cultures was done on TSA plates. The phenotypic characterisation of the colonies was done by microscopic examination, catalase, oxidase and KOH tests for Gram property. Identification of the strains was carried out by MALDI-ToF mass spectrometry. Five strains of microorganisms were identified using the MALDI-ToF. In the course of this study, nine strains of microorganism were isolated from raw milk by Diana Lazalde and 15 strains of microorganism were isolated from pepper by Yomalli Mera Cruz. Agar Disk Diffusion test was used to the susceptibility of the twenty-nine strains to the antimicrobial agent, carvacrol.

Initially, none of the strains were inhibited by carvacrol but as the concentration of carvacrol was increased, all the strains tested positive to carvacrol depending on the diameter of inhibition except *Bacillus cereus* and *Hafnia alvei*. Alcohol was used as a control as well because the carvacrol was dissolved in concentrated ethanol and diluted with water hence it was important to find out if the alcohol present in the carvacrol contributed to the inhibition. The effect of the highest alcohol concentration used in the experiments was tested. There was no inhibition in the control experiment.

Six out of the 29 strains that had the highest diameters of inhibition were used for the Optical Density measurement to determine the Minimum Inhibitory Concentration (MIC) values of carvacrol. The six isolates were *Pseudomonas lundensis*, *Buttiauxella gaviniae*, *Macroccoccus caseolyticus*, *Micrococcus luteus*, *Pseudomonas antarctica* and *Kocuria salsicia*. A lower MIC value indicates that an antimicrobial is very effective in inhibiting microorganisms. The MIC values of the tested strains were higher than

those found in the scientific publications. In conclusion, the study findings demonstrate that carvacrol is an effective essential compound that can inhibit foodborne microorganisms. Results suggest that carvacrol can be used as an effective natural antimicrobial in food systems.