Investigation of Anti-bacterial Activity of *Moringa oleifera* and Assessing as a Potential Ingredient, to Increase the Shelf Life of Minimally Processed *Alternanthera sessilis* (Mukunuwenna)

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The objectives of the study were to evaluate antibacterial properties of solvent extracts of (Dimethyl Sulfoxide (DMSO), ethanolic and hot water) of three varieties of *Moringa oleifera* (WeerawilaMiti, MahailuppallamaMiti, Mahailuppallama Jaffna), cultivated in Sri Lankaagainst foodborne pathogens including *Escherichia coli*, *Staphylococcus aureus*, *Salmonella enteritica*, *Enterococcus faecalis*, and *Bacillus cereus* and to investigate its ability to enhance the shelf life of minimally processed leafy vegetables. Leaves, flowers, pods, and bark from each variety were evaluated for their antibacterial activity. The activity was analyzed using agar well diffusion method at five different concentrations. The study revealed that *S. enteritica* was highly resistant to all extracts but *S. aureus* was sensitive to *M. oleifera* extracts. Maximum antibacterialactivity against *E. coli*, *S. aureus*, *E. faecalis* and *B. cereus* was observed for the ethanolic extract, while minimum activity was with DMSO extracts. The mean growth inhibition zone diameters were ranged from 9.72 ± 0.21 to 36.82 ± 0.13 mm against all tested bacteria. The activity decreased with decrease in concentration of the extract. The best activity was shown by Weerawila Miti variety. *S. aureus* counts were reduced in minimally processed *Alternanthera sessilis* (Mukunuwenna) by applying *M. oleifera* extracts. In six out of seven samples of Mukunuwenna, *S. aureus* counts were reduced by over 50% in vitro. It can be concluded that *M. oleifera* hot water extracts can be used as a natural antibacterial agent.

Keywords: Dimethyl Sulfoxide,Moringa oleifera, foodborne pathogens, natural antibacterial agent