



MICROBIOLOGICAL ASSESSMENT OF *CAPSICUM SPP.* SOLD WITHIN A RURAL MARKET IN DELTA STATE, NIGERIA

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Abstract

*Microbiologically safe vegetables are essential to maximize the health benefits within by adequate consumption of these produce. Proper washing of vegetables is essential for decontamination of plant and human pathogens associated with them. To assess the microbial quality of some Capsicum spp. sold in Amai local market, various fresh and dry samples were obtained from two vendors. Samples were analyzed to determine the density of microorganisms by Standard Plate Count, the characterization and identification using biochemical and fungal tests were conducted. Mean bacterial load (fresh and dry samples) ranged from 4.0×10^6 – 6.5×10^7 cfu/ml for vendor A and 0.5×10^6 – 7.0×10^7 cfu/ml for vendor B while the fungal load (fresh and dry samples) for vendor A ranged from 3.2×10^6 – 8.6×10^7 cfu/ml and vendor B ranged from 6.4×10^6 – 8.0×10^7 cfu/ml. The bacteria isolated with percentage occurrence include: *Bacillus* spp. (44.4), *Serratiamarcenscens* (11.1), *Micrococcus* spp. (22.2), *Enterobacteraerogenes* (11.1), *S. aureus* (11.1) while fungi include: *Aspergillusniger* (33.3), *Penicillium* spp. (33.3) and Yeast (33.3). The high isolation rates observed in this study indicate heavy microbial contamination of the vegetable under study, which could result from the cultivating, harvesting or post harvest processing. It is of paramount importance that effective treatment or processing be embarked upon to safeguard consumers' health in the consumption of raw or cooked produce [FJPAS 1(1) 2016].*

Keywords:

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1.0 Introduction

Fruits and vegetables are an extraordinary dietary source of nutrients, micronutrients, vitamins and fibre for humans and thus vital for health and well being. Well balanced diets, rich in fruits and vegetables are especially valuable for their ability to prevent vitamin C and vitamin A deficiencies and are also reported to reduce the risk of several diseases [1].

Fruits and vegetables are widely exposed to microbial contamination through contact with soil, dust and water and by handling during cultivation, harvesting, transporting, packaging, storage and selling to the final consumer. They therefore harbor a diverse range of microorganisms including plant and human pathogens [2]. Microbial spoilage and contaminating pathogens pose a serious problem in food safety. Differences in microbial profiles of various fruits and

vegetables result largely from unrelated factors such as resident microflora in the soil, application of non-resident microflora via animal manures, sewage or irrigation water, transportation and handling by

individual retailers [3][4]. In developing countries such as Nigeria, continued use of untreated waste and manure as fertilizers for the production of fruits and vegetables is a major contributing factor to contamination [5][6].

Despite their nutritional and health benefits, outbreaks of human infections associated with the consumption of fresh or minimally processed fruits and vegetables have increased in recent years [7]. Enteric pathogens such as *E. coli* and *Salmonella* are among the greatest concerns during food-related outbreaks [8]. Several cases of typhoid fever outbreak have been associated with eating contaminated vegetables grown in or fertilized with contaminated soil or sewage [9]. These increases in fruits and vegetables-borne infections may have resulted from increased consumption of contaminated fruits and vegetables outside the home as most people spend long hours outside the home [2]. The lack of an effective antimicrobial treatment at any step from planting to consumption and post harvest processing equipments of raw farm produce means that