



**3<sup>rd</sup> INTERNATIONAL CONFERENCE ON NUTRACEUTICALS AND FOOD SCIENCE**  
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## **TITLE: Investigating the Effectiveness of Cassava Starch-Chitosan Coating Incorporated with Orange Peel Powder on the Postharvest Quality of Belfast Tomato**

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### **ABSTRACT**

Edible coating technology has been proven to be an efficient and effective method of postharvest preservation, having a wide range of applications in food. Especially in developing countries, edible coatings and other postharvest technologies are often limited by their high cost. Several physical and biological factors contribute to tomato's perishability, including transpiration, ethylene production, high respiration rate, and microbial attack. Research into the use of edible coating materials which are generally regarded as safe (GRAS), eco-friendly, easy to apply and cost-effective, can help to significantly reduce the levels of postharvest losses and increase accessibility to consumers. The study aimed to assess the effect of edible coating materials prepared from inexpensive and locally available materials on the postharvest quality of Belfast tomatoes during storage. Chitosan was extracted from snail shells and characterized using FT-IR spectra. Different edible coating formulations were prepared by varying the concentration of orange peel powder (OP) (0,0.1,0.5,1%) in 10g/L Cassava Starch (CS) and 10g/L Chitosan (CH) coating solutions. This was applied to different groups of tomatoes and analyzed for 3 weeks. The chitosan extracted was found to have a degree of deacetylation of 59.92% obtained from the FT-IR spectra.

Results showed that the coatings significantly ( $p < 0.05$ ) delayed the changes in weight loss, Total Soluble solids and color compared to uncoated control fruits. M1(CH+CS) and M2(CH+CS+0.1 OP) showed a significant reduction in the weight loss of the tomatoes during the 3 weeks of storage. M4 (CH+CS+1OP) significantly ( $p < 0.05$ ) maintained the total soluble solids of the tomatoes during the three weeks storage period. The coated samples also showed some resistance to the color changes as well as the pH. The edible coatings had a significant impact on the postharvest qualities of the tomato. There should be further studies on the optimization of the coatings to produce edible films which can be used to preserve the fruits as well as other fresh fruit products.

### **BIOGRAPHY (upto 200 words)**

Kofi Owusu-Akyaw Oduro is a first-class graduate with remarkable credentials in the area of Food science and technology. He is currently serving a one-year voluntary service in the food science and technology department, Kwame Nkrumah University of Science and Technology as a Research and Teaching Assistant where he is helping in ongoing research.



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Growing up in a community faced with several food safety challenges of which he's once been a victim, his dream is to become a well-versed researcher in food safety to contribute significantly by helping to set up proper food defense mechanisms and liaising with appropriate institutions to reduce issues of food contamination, adulteration and tampering in his community and beyond. He has research interests in Food microbiology, food toxicology, biodegradable packaging and to ensure the sufficient and affordable supply of safe foods to consumers.

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