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**PS 1A-12 Effect of Vacuum Packaging in Nutritional Quality of Minimally Processed Potato**

**Ada M. C. N. Rocha**, Alcina M. B. Morais, and Emilie, C. Coulon. Escola Superior Biotecnologia, Universidade Catolica Portuguesa, Porto, Portugal

Potato was first cultivated in South America and it was introduced in Europe in the sixteen century. It is now among the 10 major crops of the world and it is grown in 140 countries. Potato is a good source of carbohydrates, proteins, vitamins and minerals. It has a slightly lower energy content than other roots, tubers and cereals, but this is advantageous in overcoming the problem of obesity in the developed world. In the last years consumers become more health conscious in their food choices but they also have less time to prepare healthy meals. As a result minimally processed products become an important sector of food industry due to their fresh like quality, convenience and speed to prepare meals. The physical damage or wounding caused by preparation increases the rate of degradative reactions. Vacuum packaging is one potential alternative to preserve product quality. The knowledge of the nutritional impact of minimal processing operations on these products will be an advantage for the producers that will possess information to create new markets and to the consumer himself, since he will have a new type of products highly convenient. In this study, the nutritional value and the physical quality of MP potatoes (Jaerla variety) stored during 7 days in vacuum packaging was evaluated. No significant changes were observed in colour, polyphenoloxidase and phenols content after 7 days of vacuum storage at 6°C. The shelf life of MP potatoes was effectively extended to nearly one week under refrigerated storage by using vacuum packaging systems. The main quality parameters were almost constant during storage, only ascorbic acid content decreased, nevertheless the final content was still important. Since the absence of air in vacuum packaging may favour the growth of anaerobic pathogens it would be of remarkable importance to develop the microbiological evaluation.

**PS 1A-13 Effects of Processing, Packaging and Cold Storage on the Quality of Shell Fish**

**Christine Amaka Emmanuel-Ikpeme**, Biochemistry, Biochemistry, University of Calabar, Calabar, Cross River, Nigeria  
The effects of processing, packaging and cold storage on the quality of shell fish were investigated. Lobster, clam, and crab each was divided into five groups that were subjected to different processing and packaging in high density polyethylene and low density polyethylene. These samples were subsequently stored for 4 weeks in a cold room at -20 degrees centigrades and afterwards, the biochemical parameters were determined. The results showed that the nutritional and organoleptic qualities of the samples were significantly ( $P < 0.05$ ) affected by the processing, packaging and the cold temperature storage period. The samples that were unblanched and packaged in low density polyethylene were the least preferred by the panelist.

**PS 1A-14 Fufu Yield of Three Improved Cassava (Manihot Esculenta Cratz) Cultivars and Their Physico-Chemical and Sensory Properties**

**P U Umunna** and Simeon Chituru Achinewhu. Dept of Food Science & Technology. Rivers State University of Science & Technology, Port Harcourt, Nigeria  
Dried and roasted fufu flour produced from three improved cassava cultivars, TMS 3575, TMS 82/00058 and TMS 3044, were

subjected to physical, chemical and sensory analyses. Physical analyses showed fufu yield of 32.6%, 30.8% and 28.0% swelling index of 355%, 362% (roasted flour), 295%, 285%, 298% (oven dried flour) water absorption capacity of 1.6, 1.8, 1.8 ml/g (roasted), 0.8, 1.0, 1.0 (dried) ml/g, relative bulk density of 0.27, 0.26, 0.24 g/cm<sup>3</sup> (roasted) 0.48, 0.46, 0.48 g/cm<sup>3</sup> (dried) and starch yield of 56.6, 54.8% and 57.9% for TMS 3575, 82/00058 and 3044 respectively. The dried and roasted fufu flour showed pH values of 3.7, 3.9, 3.9 (roasted) 3.9, 3.9, 4.0 (dried) titratable acidity of 0.9, 0.9, 0.9 (roasted) 0.7, 0.8, 0.9% (dried) lactic acid for TMS 3575, 82/00058 and 3044 respectively. Seventy-two hours of submerged fermentation and subsequent roasting of oven drying reduced the HCN content from 8.6, 6.2, 7.2 mg/100g in the raw cultivars to 0.79, 0.90, 1.0 mg/100g (roasted), 0.9, 1.1, 1.0 mg/100g (dried) in the fufu for TMS 3575, 82/00058 and 3044 respectively, a safe level for human consumption. All three cultivars have good sensory attributes. They could be recommended as good cultivars to processors and consumers of fufu.

**PS 1A-15 Heat Inactivation Kinetics of Polyphenoloxidase and Peroxidase from Mango**

**Amauri Rosenthal**, Food Technology, Food Technology, Embrapa, Rio de Janeiro - RJ, Brazil  
Heat inactivation kinetics of polyphenoloxidase (PPO) and peroxidase (POD) from mango fruit were investigated at five different temperatures. Enzymes activities decreased with the temperature increase and heat inactivation followed the first order reaction kinetics. The biphasic inactivation curves indicated the presence of heat labile and heat stable fractions for both enzymes. Rate constants for heat inactivation ranged from 0.81-6.99 x 10<sup>-2</sup> sec<sup>-1</sup> and 0.0072-0.013 x 10<sup>-2</sup> sec<sup>-1</sup> for heat labile and stable. POD fractions respectively, and 0.02234-0.04 x 10<sup>-2</sup> sec<sup>-1</sup> and 0.00415-0.0078 x 10<sup>-2</sup> sec<sup>-1</sup> for heat labile and stable PPO fractions, respectively. D-values for PPO ranged from 57.8-103.1 sec. for the thermal labile fraction and 294.1-555.6 sec. for thermal stable fraction. In the case of POD D-value ranged from 7.4-39.2 sec. and 181.8-322.5 sec. for heat labile and heat stable fractions, respectively. Since higher activation energy (a lower z value) implies that a smaller temperature change is needed to inactivate the enzyme, PPO in mango fruit can be considered more susceptible to temperature elevation than POD, as expected. Since higher activation energy (a lower z value) implies that a smaller temperature change is needed to inactivate the enzyme, PPO in mango fruit was more susceptible to temperature elevation than POD. z-value resulted 3.30°C and 0.74°C for PPO, and 4.99 and 1.16°C for POD, for heat labile and stable fractions, respectively. The rapid reduction of PPO and POD overall activities reached in the short heat treatment was mainly due to activity reduction of thermal labile fraction. That could be expected from the much higher D-value of thermal labile fractions, in comparison to the thermal stable ones.

**PS 1A-16 Influence of Pre-Treatments on the Textural Resistance of Potato Tissue to Freeze/Thaw Stress**

**Sergio Carbonell** and Jorge C. Oliveira. Process Engineering, University College Cork, Cork, Ireland  
The effect of blanching and other pre-treatments such as vacuum impregnation of the texture of raw vegetables has been studied, but there is not much information on how these changes in the vegetable structure affect its ability to withstand the textural impact of freeze/thaw stresses. The objective of this work was to analyse