EFFECTS OF IODIZED SALT ON THE QUALITY OF SELECTED PROCESSED FOOD PRODUCTS

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Background: The lack of hard scientific evidence on the effects of iodized salt in selected processed Philippine foods prompted the Early Child Development Project of the Council for the Welfare of Children, Department of Social Welfare and Development (ECD-CWC-DSWD) and the Food and Nutrition Research Institute of the Department of Science and Technology (FNRI-DOST) to conduct this study in collaboration with food processors. Objective: This study evaluated the physico-chemical, sensory and microbiological properties of dried salted fish, cured meat products, fermented small shrimps (bagoong-alamang) and anchovies (bagoong-dilis), and pickled cucumber salted with iodized and uniodized salt. This study also assessed the stability and quality of test food products during storage using packaging materials commercially used for packing, storing and marketing. Methods: Processed foods were produced in laboratory and large scale production using existing method, formulation and facilities of food processors. Meat products like tocino, hotdog and ham were stored in freezer for 6 months while dried fish (e.g. alumahan, galunggong, dalagang-bukid), and bottled products such as bagoong-alamang and bagoong-dilis and pickled cucumber, were stored at simulated market condition for 3-5 months. The color, moisture content, water activity ($a_w$), pH, salt content, salinity of brine solutions, iodine content of salts and test food products, and microbiological analysis were analyzed using standard methods of determinations. Sensory evaluation was done using 7-pt Hedonic Rating Scale for acceptability test, triangle test and quantitative descriptive analysis (QDA). SAS ver. 6.12 was used for data processing. All data were statistically analyzed at 5% level of significance. Results: No significant difference on the physico-chemical properties of test food products with iodized and uniodized salt during processing was noted, except for color and iodine content. In general, the color of test food products with iodized salt was enhanced. Food products with iodized salt have significantly higher iodine content per serving size (74-318 µg; equivalent to 50-212% RENI for iodine of an adult) than samples with uniodized salt (4-56 µg; 3-37% RENI), except for iodized pickled cucumber which can only supply 10% RENI. After cooking (e.g. frying, steaming), iodine retention of food products with iodized salt ranged from 85-106%, except sautéed shrimp paste which has lower iodine retention (44%) due to the spices added. Food products with iodized salt were highly acceptable and rated close to “like very much.” During storage, test food products were stable in terms of color and iodine content. Percent iodine retention during storage ranged from 67%-96%. The final food products were microbiologically safe. Conclusions and Recommendations: The iodized salt can be used in dried fish, cured meat, and shrimp and fish pastes processing to increase the iodine content and
improve the color quality of the meat products. However, iodized salt may lengthen the fermentation period of the alamang and dilis. The use of iodized salt during cucumber fermentation may not be advisable due to the loss of iodine during subsequent washing and pickling. It is recognized that the level of iodine in iodized salt varies depending on the initial level of iodine, method of iodization, handling, packing and storage, among others. It is important that quality assurance be put in place before iodized salt can be used for processing. In this way, the right level of iodine in the final product can be assured. In general, the use of iodized salt in food processing can be used as a unique selling proposition (USP) or as a claim that a product contains iodine. The significant amount of iodine retained in test food products salted with iodized salt during storage and after cooking may increase iodine availability and intake among at-risk Filipinos and this may help reduce iodine deficiency in iodine-deficient areas. To provide data base on the iodine content of raw and processed foods it is recommended that the iodine content of foods commonly consumed by Filipinos be analyzed. The 1997 Philippine Food Composition Tables has no data on the iodine content of foods. The information generated can be used as basis by the government for the promotion and mandatory use of iodized salt in processed food products.