

Study of nitrite residual change in four groups of heated meat products during storage at 4 degrees centigrade

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Background and Objectives: Due to the high consumption of meat products and application of sodium nitrite as an antioxidant, preservative and color fixative, In addition to the consideration of hazardous effects of nitrite salts on human, such as toxicity and carcinogenicity due to nitrosamine compounds, this study was designed to determine the changes of nitrite sodium residuals in four groups of meat products during storage at 4°C.

Materials and Methods: This study was performed in a descriptive method. Four groups of heated red meat, including products with 40, 55, 80 and 90 percent meat content, and containing 120 ppm added sodium nitrite, were investigated in one of the Iranian factories (n=3). During processing and storage at 4°C for 87 days, nitrite sodium residues were analyzed twice, by AOAC method in 21 steps.

Results: Sodium Nitrite residues in the products containing 40% meat were reduced from 66 ppm on the first day to 21 ppm at the end of the study. In the group of 55% meat, these residues were decreased from 63 ppm to 20 ppm, in group of 80% meat decrease from 53 ppm to 4 ppm and in group of 90% meat they were decreased from 51 ppm to 3 ppm. After 87 days the residual nitrite levels were significantly dropped in meat products. There was no significant difference between products containing 40% and 55% or 80% and 90% meat content, however, between 40% or 50% and 80% or 90% significant decreases were observed.

Conclusion: With respect to the hazards of nitrite and its derivatives to human health, as a result of this study, it is suggested that the amount of acceptable nitrite additive should correspond to the meat percentage of products, taking into consideration its microbial and organoleptic characteristics. Therefore, sodium nitrite should be added to the four groups of meat products available in the country, based on their meat percentage and the related changing profile of the residues of the mentioned salt.

Keywords: nitrite, residue, sausage

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