

Determination of Residual Nitrite Levels in Chicken Sausage for Safe Consumption

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Nitrite is a precursor of carcinogenic N-nitrosamines during processing of meat products or under human stomach conditions, as well as having its own toxicity. The factors affecting purchasing and consumption of meat and meat products are diverse and complex. The objective of this study was to determine the addition of minimum residual nitrite salt to chicken sausage and determine the safe consumption by analysing microbial count including *Clostridium botulinum*. During this study, different amount of nitrite salt (90 ppm, 112.5 ppm, 125 ppm and 175 ppm) and nitrate salt (90 ppm, 112.5 ppm, 125 ppm and 175 ppm) were added for chicken sausage samples and stored at -5° C. Residual nitrite level was tested at day 1, day 15 and day 30 at -5° C by photo electro colourimeter to determine the minimum effective residual nitrite level for causing food borne disease by *Clostridium botulinum*. Ingoing nitrite level and nitrate level as 90 ppm was considered as a control in this study. Total plate count, *Staphylococcus aureus*, Total coliforms and *Escherichia coli* were checked weekly. Colour analysis, Lightness (Le), redness (a*) and yellowness (be) values were analysed at day 1 and day 30. pH was analysed at day 1 and day 30. Sensory analysis was done by using 7-point hedonic scale for 30 untrained panellists. Highest score was gone to 112.5 ppm nitrite and nitrate salt added for all the sensory parameters. Data was subjected to analysis of variance (ANOVA) with P<0.05 significant level by SAS. Duncan Multiple Range Test was performed to compare the mean value. The results revealed that residual nitrite level range from 4.55 ppm to 12.7 ppm was free from *Clostridium botulinum*. The results of the Total plate count, *Staphylococcus aureus*, Total coliforms and *Escherichia coli* revealed an acceptable limit of microbiological situation.

Keywords: Residual nitrite, *Clostridium botulinum*, *Staphylococcus aureus*, *Escherichia coli*