

UTILIZATION OF MEAT AND EDIBLE OFFALS OF TURKEY IN SUCUK-TYPE PRODUCTS

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SUMMARY: The aim of this study is to investigate the possible usage of edible offals of turkey in sucuk production. Sucuks were produced using breasts, thighs, trimming meats, fat, skins and edible offals treated by the traditional spices. These were fermented at 3°C for 6 hours and pasteurized with light smoke at 71°C. The final product was analyzed with respect to pH, moisture, fat, protein, TBA, cholesterol and ash. Sensory evaluation of sucuks were also conducted. Fat and moisture contents were decrease during pasteurization. The TBA values of sucuk was 0.6 mgMA/kg. The sensory evaluation results reflect that the use of edible offals of turkey in sucuk were acceptable.

INTRODUCTION: The beef and the lamb meat have generally been taken as the major sources of meat products by the Turkish people. The consumption of turkey, especially of processed turkey products is not very common in Türkiye. Rational and maximum utilization of all possible protein sources in aimed to be realized by the meat industry. For this reason, poultry processing industry in Türkiye, should also develop products using turkey meat. Sucuk is a typical fermented Turkish meat product and generally a combination of beef, lamb meat, buffalo meat and fat is used in the production of sucuk (Tömek and Serdaroğlu,1991). Sucuk production by using meat and edible offals of turkey is aimed to be developed through this study.

MATERIAL and METHODS : 16 turkeys were bought from a commercial farm. These turkeys were slaughtered in approximately 5 hours. Their carcasses were dissected into thighs, breasts, trimming meat, fat, skin and edible offals. Then these parts were packaged and were held at -20°C until used.

The sucuk mixture consisted of 30% trimmings, 21% breast and thigh meat, 15% skin, 2% liver, 5% giblet, 0.5% heart, 8.5% turkey fat, 2.5% spices mixture, 3% curing mixture (150 ppm NaNO₂), 4.5% red wine and 8% water. Skin and liver were cooked before they were added to the sucuk mixture. Turkey meat, fat, cooked skin and edible offals were ground through 3 mm meat grinder plate prior to the stuffing process. Other ingredients were mixed in a cutter on the lowest speed in order to create a homogenous sucuk batter. The batter was then stuffed into fibrous casings. Sucuk chunks were waited at 4°C for 18 hours. After that, the chunks were left to natural fermentation without any starter culture at 30°C for 6 hours and pasteurized with light smoke until an internal sucuk temperature of 71°C was reached. They were then transferred to a 4°C cooler and kept at this temperature until the analysis. Chemical analyses were made both on the batter and on the end product.

Moisture content was determined using the drying oven technique (AOAC,1975), chloroform-methanol procedure was used to determine fat content (Flayn and Bramblett, 1975), protein analysis were performed using micro kjeldahl method, TBA values were determined (Tarladgis et al.1960) and pH was measured by probe electrode of pH meter directly (Landvogt,1991).

The sensory evaluation was conducted by 5 panel members. The product was evaluated and scored from 1 to 5. (1= is the poorest and 5= is the highest score). The color, texture, juiciness, flavor, and the overall acceptability of the product were evaluated.

Statistical methods: Analysis of variance was utilized. (Steel and Torrie,1960).

RESULT and DISCUSSION: The total chemical composition of the edible turkey parts, thigh, breast, skin and trimming, used in the production of sucuk is given in Figure 1. The ratios are similar to ratios found by Anon (1982). According to Anon's, result, the water ratio was 64.2%, protein ratio was 20.1%, fat ratio was 14.7% and ash ratio was 1% of the total composition. In the sucuk preparation, livers, giblets and hearts were also included in the mixture and this caused the protein and fat ratios in the product to become higher than the ratios of the total chemical composition of the deboned carcass. Additionally, the lower percentage of water in sucuk which was realized due to the drying of the product, had an increasingly effect on the protein and fat ratios (Figure 2).

The pH alterations during the production of sucuk are shown in Figure 3. The initial pH of the sucuk mixture was 5.94. During the whole fermentation, pH showed a decrease. After the waiting period at 4°C for 18 hours, pH was found as 5.8 and at the end of the fermentation and of the 30th hour, pH was measured as 5.48. At that point, the product was pasteurized and the final pH was determined as 5.6 after a slight increase. In the traditional sucuk which is produced using beef, the pH value generally decreases below 5.0 after fermentation, but in this study, a pH as low as that was not allowed in order to prevent sourness which might occur because of the glycolytic activity of the white muscles.

The cholesterol content of the sucuk was 104.5 mg/100g. According to the reports of Bulgay et al. (1992) and Anon (1980), this cholesterol level is high compared to the levels in the dark and white muscle of turkey. The reason for this high value is the use of edible offals and skin in sucuk.

The initial and final TBA values of sucuk were found respectively as 0.2 mg. malonaldehyde/kg and 0.6 mg. malonaldehyde/kg. This indicates that a little lipid oxidation took place during the process. (Sinhuber and You, 1958) put forward the maximum level that can be accepted for the human health as 10 mg malonaldehyde/kg. The TBA value of the turkey sucuk is considerably lower than this value.

In the sensory evaluation of the product by five panel members, the products were found to be highly acceptable having a mean score of 4.5 over 5.0 (Figure 4.). The texture of the product was graded as the lowest 4.0, being a little softer than the traditional sucuk.

In a similar study, which was made by using chicken meat in the production of sucuk. (Tömek and Gönençayoğlu, 1989), the product was not considered to be successful because of the sourness and textural defects it had. In the turkey sucuk, these problems were overcome and the product was accepted as successful.

CONCLUSION: Apart from parts of turkey which can be retailed after dissectioning the carcass, the trimming meats, edible offals and skin are also suitable for the production of a sucuk-type close to the traditional one.

The extension of the industrial usage of turkey meat in this way, will introduce a more economical meat source and the breeding of turkey will be widespread in Türkiye.

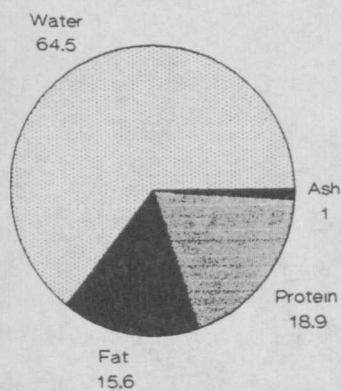


Figure 1 : Total chemical compositions of edible turkey parts.

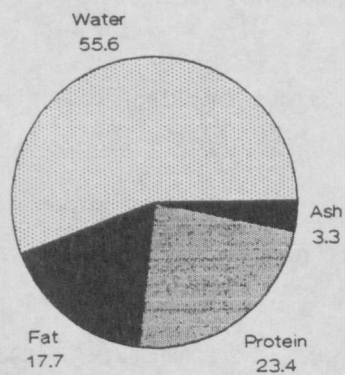


Figure 2 : Composition of turkey sucuk.

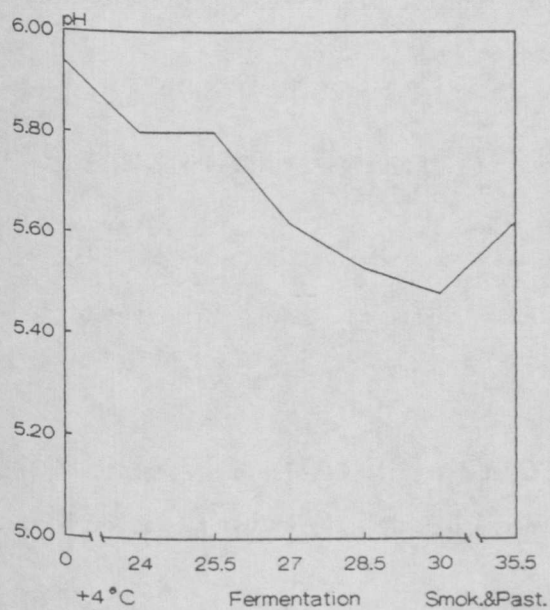


Figure 3 : pH alterations during the production of turkey sucuk.

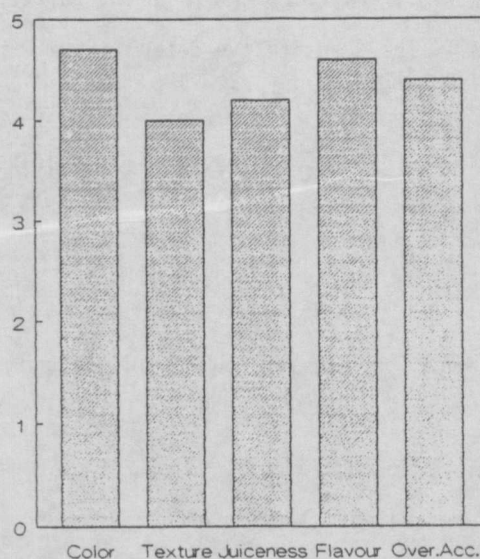


Figure 4 : The results of sensory evaluation of turkey sucuk.

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