

## Use Of Chicken Fat As A Functional Ingredient In Sausage Manufacturing (#523)

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### Introduction

Colombia ranks 24th in world production of chicken meat, although it represents less than 1% of the world. In the American hemisphere ranks 8th, representing 2.1% of regional production. Both abdominal fat and fat from chicken gizzards extracted during the slaughter of poultry has been considered a co-product in the poultry industry; this fat is often used as a raw material in the manufacture of feed with low economic benefit or, in the worst case, is discarded generating an environmental impact. However, previous research that has evaluated the lipid profile of both gizzard fat and the abdominal fat of chickens fed cereals, such as maize, sorghum and soya, has determined that these fats are a source of fatty acids such as palmitic acid, oleic acid and linoleic acid (Cahaner et al., 1986).

On the other hand, chicken meat and chicken products have become very popular worldwide being chicken sausages one of the most popular products (Barbut, 2001). So, the aim of the work was to study the application of chicken fat by-products in sausages formulation and to evaluate its quality.

### Methods

During the development of this research, samples of abdominal fat and chicken gizzard, frequently eliminated as chicken processing residues, were used from three farms (Nirvana, La Goleta and Villa Rita) located in different environmental zones. Fat and fatty acids were identified and quantified by capillarity in the gas chromatograph (GC-2014 Gas Chromatography, SHIMADZU) (AOAC, 1998). This fat was used as ingredient for the elaboration of chicken sausages: control (commercial chicken sausages with chicken skin as fatty ingredient); T1: chicken sausages made substituting 50% of the fatty ingredient by chicken fat; T2: chicken sausages made substituting 40% of the fatty ingredient by chicken fat. In these sausages, texture (Texture Profile Analysis using a TA-XT2i, Brookfield equipment), CIELAB colour properties (using the X-RITE spectrophotometer) and sensorial analysis (ICONTEC, 2004) were assessed.

### Results

For the lipid profile of chicken fats, no statistical differences were found between farms (Table 1). Regarding chicken sausages characterization, there was not significant differences in the texture parameters (TPA) between sausages. Sausages with 50% fat showed significant differences in lightness (L\*), redness (a\*) and yellowness (b\*) respect to control sausages. These differences were also detected by sensory analysis. Panellist detected differences between both sausages in others important attributes such

as odor/smell and meat flavour (Figure 1). Sausages with 40% fat showed color differences, respect to control sausage, only for yellowness (b\*), but these differences were not detected sensorially (Figure 2).

Table 1. Lipid profile of the chicken fat from the three farms studied

| LIPIDIC PROFILE                   | FARM 1<br>Villa Rita | FARM 2<br>La Goleta | FARM 3<br>Nirvana | STANDARD ERROR |
|-----------------------------------|----------------------|---------------------|-------------------|----------------|
| Palmitic acid (%)                 | 18.4                 | 17.1                | 18.4              | 4.0            |
| Oleic acid (%)                    | 27.5                 | 25.4                | 28.7              | 6.0            |
| Linoleic acid (%)                 | 17.2                 | 17.1                | 17.3              | 0.6            |
| Saturated Fat (%)                 | 23.3                 | 21.9                | 23.6              | 3.9            |
| Unsaturated Fat (%)               | 51.2                 | 49                  | 52.6              | 3.6            |
| Monounsaturated Fat (%)           | 32.9                 | 30.6                | 34.1              | 5.4            |
| Polyunsaturated Fat (%)           | 18.3                 | 18.4                | 18.5              | 0.5            |
| Omega-3 fatty acids<br>(mg/100 g) | 1107                 | 1179                | 1163              | 3.2            |
| Omega-6 fatty acids<br>(mg/100 g) | 17233                | 17173               | 17357             | 0.5            |
| Omega-9 fatty acids<br>(mg/100 g) | 28635                | 26519               | 29897             | 6.0            |

### Conclusion

The use of by-products obtained from slaughterhouses is a competitive market advantage for functional food companies that use chicken fat as raw material in the formulations of sausage meat products. Thus generating a sustainable production cycle that allows the strengthening of each of the links of the agro-industrial poultry chain in Colombia, taking advantage of the waste produced and betting on the production of food with high nutritional value, cleaner and organized in the country.

## Notes

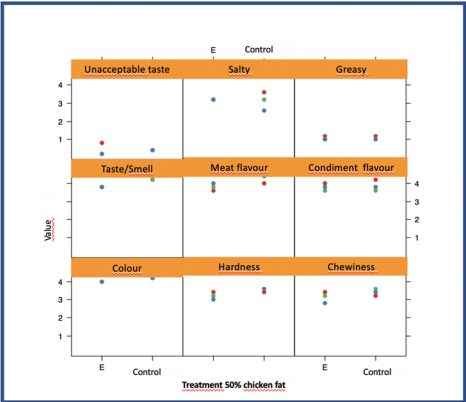
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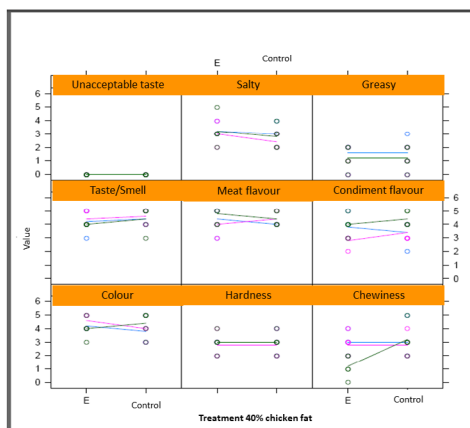
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**Figure 1.** Sensory evaluation of sausages with 50% chicken fat byproducts respect to control

Notes



**Figure 2.** Sensory evaluation of sausages with 40% chicken fat byproducts re- spect to control

## Notes