

Evaluation of marketable quality of cooked sausages

Franjčec¹, I., B. Njari², Ž. Cvrtila Fleck²

professional work

Summary

Within this research there was evaluated the quality of frankfurters as a representative of cooked sausages on the market of Krapina-Zagorje County. The obtained results were interpreted in terms of provisions of previous Official Gazette of the Republic of Croatia No. 53/91 and current regulations Official Gazette of the Republic of Croatia No. 1/2007. In chemical research there were determined 58.36% water content, 27.75% fat, 11.75% total protein, 0.24% hydroxyproline, and 1.11% ash. A conduction of chemical analyses is necessary in the aim of quality evaluation of a product. By analyzing cooked sausages, it was determined that in terms of chemical composition all the researched frankfurter samples meet the requirements of the Regulation on Meat Products Official Gazette of the Republic of Croatia No. 1/2007. Considering the obtained results of quality parameters and the determined ratio of protein, fat and water shares, this research confirms satisfactory quality of cooked sausages that can be found on the market of the Republic of Croatia.

Key words: frankfurters, chemical analysis, quality

Introduction

Production of sausages in Croatia has a long tradition in households, crafts and in industry. Meat processing around the world, as well as here, has experienced a great development in recent years. Artisanal modes of production have been completely replaced by industrial ones. Meat processing means application of one or more preserving procedures with the goal of obtaining a sufficiently sustainable, sensory – attractive, good product. It means application of different technological procedures with the goal of satisfying culinary, gastronomic, i.e. nutritional needs of the population. As the use of modern appliances for chopping meat, fat tissue and other constituent parts (connective tissue, skins, offal) dominates in technological process of cooked sausages, average consumers are even more brought into a situation that they are not able to make a direct sensory evaluation of cooked sausages. Quality of meat products depends on quality of raw materials, i.e. on

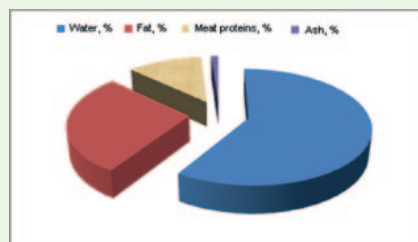
quality of meat in the strict sense of the word, on the choice of additives and the choice of technological processing procedures and the quality of packaging materials. Any disturbance of the listed relations harms sustainability because of insufficient preserving effect, or it affects quality because of degradation and devastation of the production system and sensory traits of a finished product. In the goal of determining a nutritional value and functional characteristics, as well as products' acceptability, it is necessary to conduct chemical analyses which determine composition of the products and finally, estimate their health safety (Cvrtila et al., 2004

As it comes to production mode of cooked sausages, two production modes are possible as a rule: of warm and of cooled or frozen meat.

Production technology of cooked sausages has changed significantly in our county lately. Along with the achievements in the world, classical

production of cooked sausages, especially frankfurters, has been practically abandoned here and it has given way to conventional production. That production is characterized by: using modern machines (vacuum cutter, colloid mill, vacuum filler, automatic thermal smoke chamber, etc.), adipose tissue emulsifiers in water, "creams" of skins and the use of new emulsifiers. At first, they were proteins in the form of Na-caseinate, and lately, even more isolated soy proteins and other preparations (Živković, 1986).

We pay special attention to sensory traits of sausages as well as to their chemical composition. Cooked sausages of good quality have to be firm, juicy and not to release water. They should have a pleasant characteristic odor, which is complemented with smells of smoke and spices. Their casing is of dark red color, without damages, folds or deformations, and firm consistency. Cross-section of cooked sausages has to be homogenous, of



Graph 1 Average results of chemical composition of frankfurters

light pink color and without a larger number of small cavities, as well as without visible parts of connective and adipose tissue.

All the listed has encouraged us to evaluate the quality of frankfurters as a representative of cooked sausages on the market of Krapina-Zagorje County, and to compare the obtained results with the previous ones (Anon., 1991) and current legislation for sausage quality (Anon., 2007).

Material and methods

For the needs of this paper we have been researching the quality of 10 randomly taken frankfurter samples. All sausage samples underwent a sensory research after their delivery to the laboratory. The research included the appearance (casing), consistency, cross-section, color, odor and aroma. Sensory researches were performed by a three-member panel. There were determined water content (ISO 1442), fat (ISO 1443), protein (ISO 937), hydroxyproline (ISO 3496) and ash (ISO 936) in frankfurter samples for the needs of determining chemical quality of cooked sausages.

Results

During the sensory research of samples, it was determined that the surface of sausages was without damages, folds and deformations. All sausages were firm and juicy, and

didn't release fluid under a slight pressure. Sausage stuffing was of a homogenous pink color. All of the samples were evaluated as satisfactory according to requirements of the current Regulation on Meat Products (Anon., 2007).

Discussion

All the researched sausage samples were evaluated as flawless (n=10) in sensory evaluation. Considering the fact that provisions of the Regulation on Quality of Meat Products (Anon., 1991) and the Regulation on Meat Products (Anon., 2007) which is currently in force in the sense of sensory evaluation of cooked sausages, haven't significantly changed, the sausages meet all the listed regulations.

In comparison with earlier researches of sensory quality of cooked sausages (Simrak, 1980, Kecko, 1989), we can say that our samples were actually above expectations in terms of quality. Our research results have shown that average water content was 58.36%, fat 27.75%, total protein 11.75%, hydroxyproline 0.24%, and ash content 1.11%. According to the data by Kulier (1996), a frankfurter as a representative of cooked sausages contains in total 12.4 g of protein, 24.4 g of fat, and 2.58 g of minerals. By keeping in mind those tabular values, we can say that our determined av-

erage values are in accordance with those literature data. If we analyze the listed data in terms of previous regulations (Anon., 1991) and the fact that back then water content was limited to 60%, and fat content to 30%, we can say that all the researched samples meet the regulations. Furthermore, by interpreting the listed results in terms of current legislation (min. protein quantity in frankfurters must be 10%), we also conclude that all the researched samples meet the proscribed conditions. In spite of that, literature data differ. So, a chemical composition of cooked sausages rarely satisfied the proscribed norms because of excessive adding of adipose tissue into sausage stuffing (Smiljan, 1977). This author determined in his researches water content of 51.3% and fat content of 32.3% in frankfurter samples after one day of storage. The research that goes in favor of the above is by Skrivanko (2003), who determined that 181 (21.62%) out of the total of 835 chemically analyzed sausage samples did not meet provisions of the Regulation (Anon., 1991) and they were: 55 samples (6.57%) because of the increased content of added polyphosphates, 1 sample (0.12%) because of the increased nitrite content, 67 samples (13.65%) because of the increased water content and 62 samples of cooked sausages (20.39%) because of more than 30% of fat. On the other hand, Lelas (2002) determined within cooked sausages monitoring that average values of quality parameters did not surpass values proscribed by the Regulation on Quality of Meat Products (Anon., 1991). The results of our research have shown that all the analyzed frankfurter samples meet the conditions of the Regulation (Anon., 2007). Considering all the listed, we find it necessary to emphasize the fact that producers in some cases lose their customers' trust because of the fact that technological process of cooked sausage production is dominated by use of modern appliances for fine

¹ Ivica Franjčec, DVM.

² Bela Njari, PhD, full professor; Željka Cvrtila Fleck, PhD, assistant professor, University of Zagreb, Faculty of Veterinary Medicine, Department of hygiene and technology of foodstuffs of animal origin, Zagreb, Heinzelova 55