THE CHEMICAL COMPOSITION OF OSTRICH MEAT

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Abstract

Several farmers of Latvia have established ostrich substituting traditional animal growing farms. Ostrich meat is frequently described as a healthy alternative to other meat products. Ostrich, a red meat, is even lower in calories, cholesterol and fat than skinless chicken and turkey, while remaining high in the content of iron and protein.

The aim of the investigation is to evaluate the chemical composition of frozen ostrich meat obtain in Latvia and compare it with other meats.

The samples of meat for experiments were obtained from ostrich meat producers. Moisture content was determined by drying of the samples at 100 °C to a constant weight (ISO 6406). Protein content was determined by Kjeldahl method (ISO 5983). Fat content was determined by Soxlet extraction method (ISO 6492). The calories in different meats were determined by an approved procedure which includes summing of the calories from fat and from protein.

The investigations showed that there were no significant differences between the main components of ostrich meat produced in Latvia and those found in the data in literature. Chemical composition of ostrich meat does not significantly differ from that of other types of meat. The research suggests that ostrich meat can be substituted for beef or chicken in any recipe, including meat-processing products.

Key words: meat, ostrich, chemical composition.

Introduction

The types of meat commonly consumed in different countries are dependent on eating habits and the ability to rear the animals successfully, which is influenced by local climate, geography and economy. Beef, pork, and chicken are the major meats consumed in the world, including Latvia (Sandler et al., 1999).

The ostrich (*Struthio camelus.var domesticus*) is the largest of all birds. It is an important animal in many livestock industries because of its healthy red meat and skin. The ostrich is a relatively new agricultural animal in many parts of the world. Recently there has been a huge interest in ostrich farming for its low fat meat, leather, feathers and eggs. South Africa is the main provider of ostrich meat in the world market. Only young stocks up to 15 month of age are slaughtered for meat export (Girolami, 2003). The latest statistics show that current ostrich meat production is not enough to meet the increasing demand in Europe. Production ability makes ostrich farming an extremely viable and highly economical proposition for developing countries (Jensen, 2004).

Meat is one of most important products of ostrich. It is very popular in European restaurants. It comes in a variety of cuts, including prime steaks, filets, sausages, burgers, stir-fry. It can be substituted for beef, pork, lamb, turkey, or chicken in virtually any recipe.

Ostrich meat is frequently described as a healthy alternative to other meat products. Ostrich, a red meat, is even lower in calories, cholesterol and fat than skinless chicken and turkey, while remaining high in iron and protein.

Chemical composition of processed ostrich products and similar types of commercially available products suggested that processed ostrich products can be formulated to compete successfully with similar types of products derived from other meat species (Fisher, 2000).

Commercial rearing of ostrich meat is new to Latvia. The first several ostriches were bought in Latvia ten years ago. Now the largest ostrich farms are located in the east part of Latvia in Jekabpils region (Horbacuks, 2005; Bundze Zdanovska, 2005).

There have not been carried out studies regarding chemical composition of ostrich meat and processed ostrich products in Latvia.

The aim of our investigation is to evaluate the chemical composition of frozen ostrich meat obtained in Latvia for processing and compare it with other meats.

Materials and Methods

Research was performed at the Faculty of Food Technology and in the Agrochemical Analyses Laboratory of LLU. The samples of meat for experiments were obtained from Latvian meat producers. Ostrich, beef and poultry meat was frozen and stored in a freezer before analysis. Meat samples were ground in food blender to ensure the homogeneous consistence of meat samples for analysis.

Moisture content was determined by drying the samples at 100 °C to a constant weight (ISO 6406). Protein content was determined by Kjeldahl method (ISO 5983). Fat content was determined by Soxlet extraction method (ISO 6492). The calories in different meats were determined by an approved procedure which includes summing of the calories from fat and from protein. The calories from carbohydrates in fresh meat products are assumed as zero. The analyses were carried out in duplicate. The data given here are the mean value of the measurements.

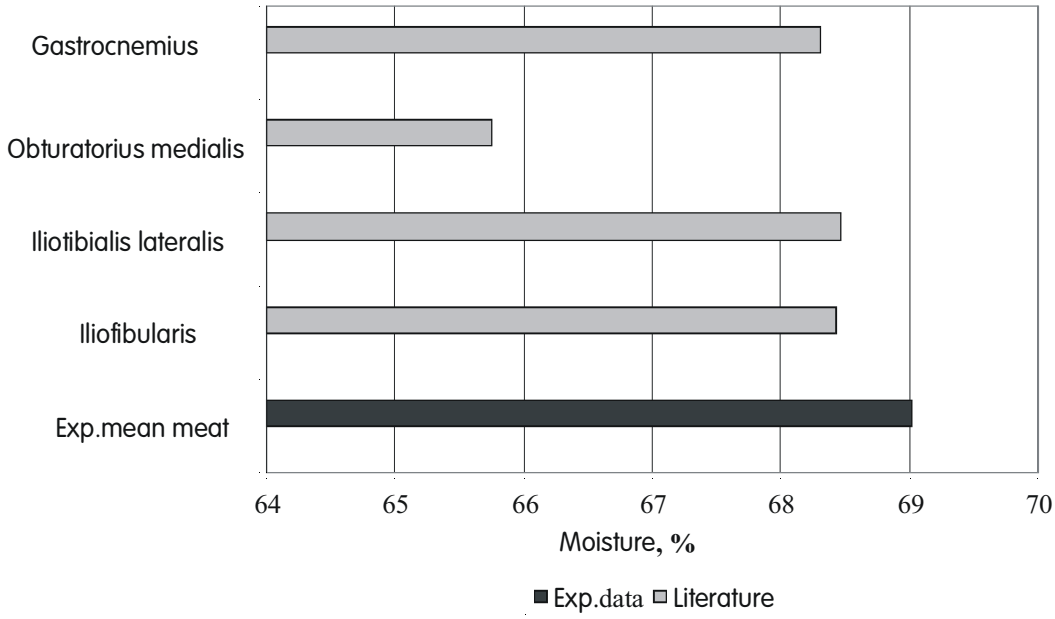

Figure 1. The moisture content in analysed ostrich meat compared with data in literature.

Results and Discussion

Meat tissue composition varies according to differences in species, breeding, and anatomical location of cuts within carcass.

Ostrich muscles ranged in moisture from 65.75 to 68.46% (Ostrich meat industry development, 1994). Moisture content in ostrich meat in different parts of ostrich muscles compared with literature data is showed in Figure 1.

The moisture content of experimental sample of ostrich meat was approximately 69.02 % compared with beef (moisture content 70.61 %) and chicken (moisture content 69.15 %), although some authors indicate that ostrich meat contains a higher amount of water ranging from 75.1 % to 77.7 % (Horbancuks, 2005). The differences in results are not essential compared with data in literature and could be explained by the feed composition, using for ostrich, peace of meat cut.

Meat is a significant source of protein, which is of high biological value. Proteins constitute 16–22 % of skeletal muscle tissue and contain all amino acids. The protein content of different meats and cuts varies inversely with fat content.

The protein content did not differ in wide ranges between beef, ostrich and chicken and literature data and ranged in value from 25.21 % in ostrich to 23.88 % in chicken. It means that it is possible to obtain ostrich meat with a corresponding protein content in Latvia, too (Figure 2).

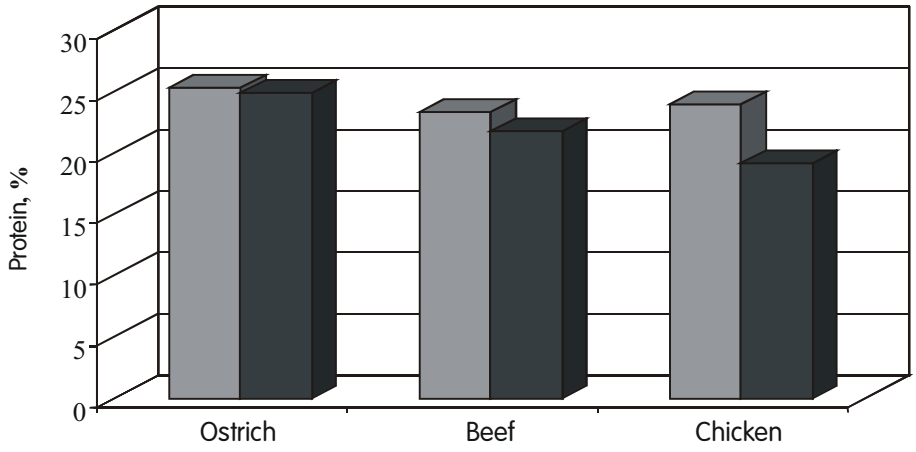

Figure 2. Protein content in ostrich, beef, and chicken meat.

*The source of literature data is Encyclopaedia of Human Nutrition

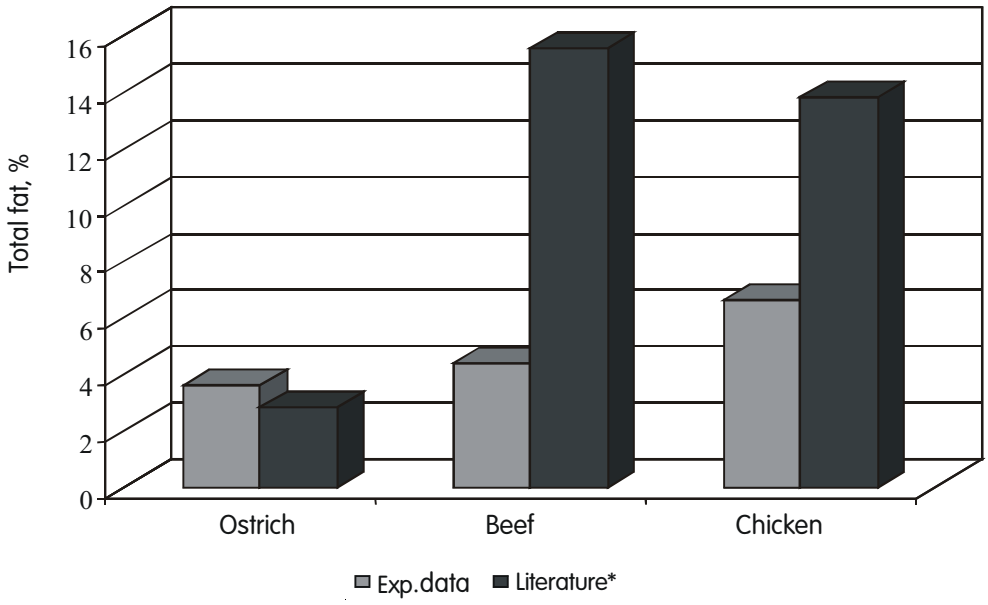

Figure 3. Fat content in ostrich, beef and chicken meat.

**The source of literature data is Encyclopaedia of Human Nutrition*

Animal adipose tissue (fat) is composed primarily of neutral lipids and phospholipids. Various lipids forms serve as an energy source for the cells, as a structural and functional component of the cell (Jensen, 2004). Ostrich meat was lower in the total lipids content than the meat cuts from beef and chicken (see Figure 3). If compared the obtained data with literature data, the fat content in experimental ostrich meat samples was higher, but in beef and chicken meat samples - lower. The differences could be explained by the influence of local winter climate, by the feed composition and place of meat cut.

Estimating the amount of calories of different meats, in our case we can observe that ostrich meat has the same energy balance that beef meat (Figure 4). It could explain we used for analyses the lean meat, although the data from literature showed the differences in calories existed between ostrich meat and beef meat. This is also one of the reasons why European consumers prefer meals prepared from ostrich meat and choose as a healthy alternative to other meat products.

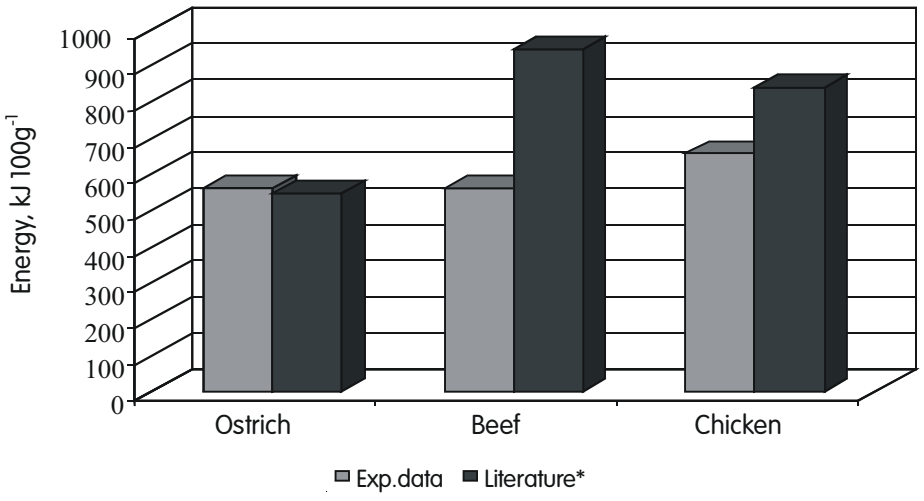

Figure 4. Calories in different meats.

**The source of literature data is Encyclopaedia of Human Nutrition*

Conclusions

1. The experimental data showed that no significant differences were observed between the main components of ostrich meat produced in Latvia and those found in the data in literature.

2. The chemical composition of ostrich meat does not significantly differ from that of other meats. It allows concluding that ostrich meat can be substituted for beef or chicken in any recipe including meat processing products.

3. Further investigations are necessary for examination of technological and sensory properties of frozen ostrich meat.

Acknowledgment

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