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SECONDARY COLLAGEN-CONTAINING RAW MATERIALS OF CAMEL MEAT – AN ALTERNATIVE SOURCE OF PROTEIN

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Abstract: One of the modern tasks of the meat industry in Kazakhstan is the use of additional sources of meat raw, the creation of combined meat products with the optimal ratio of macro and micronutrients. Given the trend of rising numbers of elderly people, the need to ensure protein deficiency, the creation of herodietic protein products based on the camel meat and its by-

products is relevant. In this regard, this article discusses the nutritional and nutritional value of camel meat and the rational use of low-value slaughter products, namely camel shanks to obtain protein hydrolysates.

Key words: meat, camel meat, protein, growth trend, macro- and microelements

ВТОРИЧНОЕ СЫРЬЕ, СОДЕРЖАЩЕЕ КОЛЛАГЕН ВЕРБЛЮДНОГО МЯСА - АЛЬТЕРНАТИВНЫЙ ИСТОЧНИК БЕЛКА

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Аннотация: Одна из современных задач мясной отрасли Казахстана - использование дополнительных источников мясного сырья, создание комбинированных мясных продуктов с оптимальным соотношением макро- и микроэлементов. Учитывая тенденцию роста числа пожилых людей, актуальна необходимость обеспечения белкового дефицита, создание геродиетических белковых продуктов на основе верблюжьего мяса и его субпродуктов. В связи с этим в данной статье обсуждается пищевая и пищевая ценность мяса верблюда и рациональное использование малоценных продуктов убоя, а именно голени верблюда, для получения гидролизатов белка.

Ключевые слова: мясо, верблюжье мясо, белок, тенденция роста, макро- и микроэлементы

Scientists rarely touch on the camel problem because there is little camel meat in the market and our knowledge is still not enough. The main reason is that the consumption of camel meat is low due to the small number of camels in the world, and also because camels are mainly present in developing countries where research in the field of meat is underdeveloped compared to Western countries. According to the latest FAOSTAT database (2015), the total production of camel meat in 2013 amounted to about 539,100 tons. In the regions, Africa was the leader with 416,292 tons, followed by Asia (122,608 tons) and Europe (200 tons) [1]. The market for camel meat is estimated to grow with a significant average annual growth rate (5.36%) in 2018-2022. The best players in the camel meat market are Accenture, HCL Technologies, Infosys, TCS, Wipro.

The composition of camel meat is an important indicator of its functionality. In general, the meat of young camels is similar in protein content to the meat of young cattle, lamb and goat. Camel meat has a competitive advantage over beef in that it has low production costs and, therefore, low wholesale and retail prices.

The collection and dissemination of information about camel meat and meat products will create more opportunities in the camel meat industry. Accurate research data is very important. Meat is generally considered a functional food for treating many diseases and for improving productivity in many cultures around the world. It is believed that camel meat and liver have medicinal properties. The use of camel meat stimulates blood formation and metabolism, reduces blood sugar and cholesterol, and also reduces the permeability of the walls of blood vessels, which, in turn, normalizes heart rate and blood pressure. In addition, this type of meat improves the condition of the mucous membranes, the work of the gastrointestinal tract, and in addition, it has an antioxidant, anti-inflammatory, immunity stimulating impact [2].

The popularity of camel meat around the world is growing due to its health benefits. This could have a positive impact on global market growth in the coming years [3].

Camel meat is a valuable food source rich in many essential amino acids, minerals (iron, zinc and selenium), vitamins (E and group B), biologically active compounds (Q10, carnosine, anserine, glutamate ions), omega-3 fatty acids. In addition to the nutritional value of meat, it provides several palatabilities and rewarding experiences that are not usually achieved by other protein sources.

A comparative assessment of the chemical composition of meat of various types of slaughter animals indicates that the amount of total protein of camel meat is not significantly different from other types of meat [4]. Camel meat is also known for its low cholesterol (Fig.1) and high iron, one of the main ingredients of haemoglobin in the blood, which helps reduce the risk of anaemia [5].

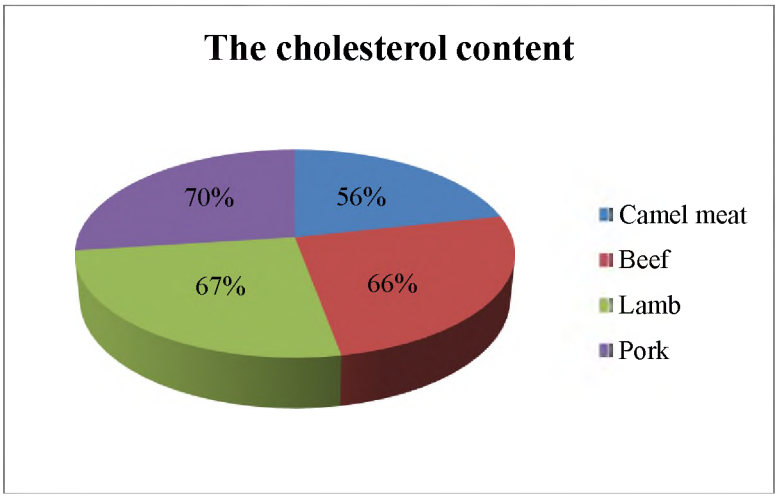

Fig.1 – Content of cholesterol in camel meat, beef, lamb and pork

It should be noted from Figure 1, that camel meat contains the least cholesterol from the most consumed types of meat, even less than poultry.

Camel meat can also be used as a remedy for exhaustion and fatigue because it contains the energy needed by the cells of the body. In addition, camel meat contains glycogen, the carbohydrate of which is easily absorbed and metabolized in the body and is converted into glucose, which activates the cells.

Camel meat can also provide older people with the energy and protein they need to compensate for damaged tissue and the growth of hormones and enzymes necessary for cell function.

Materials and research methods

Materials for research were camel meat and camel shanks. Experimental researches were carried out using calculated, standard physicochemical, rheological, organoleptic methods.

As a result of the studies, it was found that the average yield of camel meat pulp is 72.2-73.6%, depending on the age and fatness of the animal [6]. The ratio of meat and bones in the carcasses of camels ranges from 3.3-3.9: 1, which indicates their good full meatiness. The content of tendons in the carcasses of young camels ranges from 5.0 to 5.4% by weight of the carcass, which is 15-25% lower than in adult animals. The deboning of camel carcasses at the age of 4-5 years showed a slightly higher bone yield (21.0-21.6%) in comparison with normative data for cattle of the first category of fatness (20.9%).

The results of their research

The meat coefficients of the back shank (2.63) and front shank (3.23) of the camel cut above the beef cuts are the back shank (0.96) and the front shank (1.33). Table 1 provides a comparative table of the chemical composition and energy value of camel shanks and pork legs.

Table 1

Chemical composition and energy value of camel, beef and pork shanks

Name of shanks	Content				
	Moister	Fat	Total protein	Ash	Energy value, kcal
Camel shanks	76.15	2.10	20.63	1.12	101.42
Beef shanks	62.98	4.33	32.22	1.13	167.85
Pork shanks	57.0	21.0	21.2	0.8	273.8

An analysis of the data in Table 1 shows that in a camel shank, the moisture content correlates with the fat content, and also contains the least amount of fat and has a low-calorie content.

A promising direction for the use of secondary collagen-containing raw materials for food purposes is to obtain hydrolysates or protein preparations from them. The source of collagen-containing raw materials with a high content of connective tissue proteins, as well as minerals, including calcium, can be camel legs that have not found full and rational use.

There are many scientific studies of obtaining protein hydrolysates from the shank of cattle, pork ears, tail, and shank, sea fish, which were then used to enrich and create new products [7]. Protein hydrolysis can be carried out in three ways: by the action of alkalis, acids, and proteolytic enzymes. Compared with chemical technologies, the enzymatic method for producing hydrolysates has significant advantages, the main of which are: accessibility and ease of implementation, low energy consumption and environmental safety.

Conclusion

The production of animal proteins is environmentally friendly without the use of chemicals. Given the versatility of the functional, technological and rheological properties of animal proteins, they can be used in combination with vegetable proteins, which will increase the nutritional value of the product, improve its taste, appearance and reduce production costs.

Based on the research results of camel meat, given their high dietary functionality, it follows that camel shanks are the preferred raw material for the production of protein hydrolysates and can be used for the manufacture of specialized meat products, including for herodietetic nutrition.

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