

Қазақстан Республикасы Тәуелсіздігінің 30 жылдығына арналған «Сейфуллин оқулары – 17: «Қазіргі аграрлық ғылым: цифрлық трансформация» атты халықаралық ғылыми – тәжірибелік конференцияға материалдар = Материалы международной научно – теоретической конференции «Сейфуллинские чтения – 17: «Современная аграрная наука: цифровая трансформация», посвященной 30 – летию Независимости Республики Казахстан.- 2021.- Т.1, Ч.2 - P.77-80

SOY MEAT PATES WITH SPINACH AND TURMERIC

Satayeva Zh.I. M.T.Sc.

Yermukhambetova A.B., student

Mashanova N.S., D.T.Sc.

S. Seifullin Kazakh Agrotechnical University, Nur-Sultan

Currently, the meat industry is the largest branch of the food industry, producing a wide range of food, technical and medical products.

However, the market for “alternative” meat, not only in Kazakhstan, but in the world in general, is gaining momentum, although it is still very young. The first prototype of “alternative” meat appeared in the United States only in 2009. And the first relatively large sales began only in 2016.

The most popular plant-based food companies in the USA are Beyond Meat and Impossible Foods. They use pea and soy protein, as well as dyes and flavour enhancers to give the plant-based paste the look, texture, and flavour of animal meat.

The production of pate today is a high-tech process that allows preserving all the benefits of the product and its taste. Pates made of soy meat are of special interest [1].

Soybeans are the most widespread pulses and oilseeds on our planet, cultivated by more than 60 countries on five continents in the temperate, subtropical and tropical zones.

Nowadays there are many soy products on the market for any category, any lifestyle, any taste. They include such products as soy milk, soy cheese - tofu, fermented bean curd - tempeh, burgers, soy cocktails, puddings, soy substitutes for meat, poultry and fish, which combine well with other ingredients, absorbing their taste.

Soy meat, also called soy texturate, soy protein texturate, or textured vegetable protein (TVP) is a soy product, a meat substitute, usually made from defatted soy flour. Soy meat is an instant food rich in protein and low in fat. It is widely used in vegetarian and East Asian cuisines.

Soy meat is made by extrusion cooking of dough from fat-free soy flour or soybean meal (so-called white flakes) and water. The resulting mass of spongy consistency is crushed and then dried. Depending on the grinding of the dough during the production process, soy meat pieces can have different shapes and sizes, for example: minced meat (granulated), flakes, goulash, chops, cubic or oblong pieces, etc. The raw material for soy meat production can be a by-product of soybean oil production which makes its production more economically attractive.

Soy meat is a healthy and natural product that is indispensable for dietary nutrition. Soy meat is not inferior to beef in nutritional quality and even surpasses it in some respects. The main advantage of such a valuable product is that it consists of 50% easily digestible vegetable protein. It is also rich in vitamins. It contains vitamins E and D, group B. It is also useful for the reason that it contains useful polyunsaturated fatty acids (Omega-3, as well as Omega-6) in an ideal ratio. Furthermore, it contains important trace elements like potassium, calcium, iron, phosphorus, etc. [2].

It is known to be beneficial because it contains 50-70% nutritious high-quality protein. It is this protein that is a source of amino acids in the body, without which the formation of enzymes and amino acids, as well as the growth and restoration of damaged body tissues is impossible. If you periodically include soy meat in your diet, you can significantly reduce the

risk of developing cardiovascular diseases, osteoporosis. Also, a ready-made dish helps fight obesity. Lecithin and choline contained in the product support the nervous system of the body, stimulate the activity of the brain. They also help to increase the speed of reaction, improve memory and thought processes.

Soy meat pates with spinach added are an alternative product for both ordinary people and those who suffer from obesity and cardiovascular diseases.

It is also important to know that the composition of soy meat contains valuable substances called phytic acids. These substances are able to slow down the multiplication of tumor cells.

The objective of the work is to develop a line for the production of soy meat pate with the addition of spinach, turmeric and lentils.

Soy meat contains only 102 calories, while it is rich in complete protein, which makes up 50-70% of the total product. While fats account for only 3-4%. Like all soy products, soy meat contains vitamins B₁, B₂, B₆, E, D, as well as magnesium, sodium, iron and potassium. Soy meat contains substances that lower the level of "bad" cholesterol in the blood and, as a result, reduce the risk of cardiovascular disease. According to research by American scientists, phytic acid, which is found in soybeans, helps fight cancer cells.

Soy meat is a dried semi-finished product that invariably retains its useful qualities for a year. Important requirements are: closed containers, absence of moisture and sunlight. Cooked meals should be kept in the refrigerator and consumed in a maximum of 3 days. If desired, they can be frozen. After thawing, the soy does not lose its taste and properties. The recipe for the developed soybean pate is presented in Table 1.

Table 1 - Recipe of the soy meat pate

Raw materials and basic materials	Product weight by prescription, g
Soy meat	500
Lentils	160
Spinach	200
Turmeric	15
Paprika	15
Black pepper	15
Salt	15
Vegetable oil	80
Total:	1000

According to the requirements of soy meat as per TS-TC the recommended shelf life in a dry place at a temperature not exceeding 20°C and a relative humidity of 75% is no more than 12 months [3].

The organoleptic characteristics of soy meat pate are presented in Table 2.

Table 2 - Organoleptic characteristics of the soy meat pates

Name	Characteristics
Appearance and consistency	Paste-like, tender, homogeneous throughout the mass
Colour	Brown, orange
Odour and taste	Pleasant, without foreign smell, with aromas of spices, with a taste of soy and lentil.
Foreign admixtures	Not acceptable

Soy meat is an alternative to real meat. This meat alternative is a good solution for those looking to lead a healthier lifestyle or lose weight as it does not contain fat. Soy meat contains a textural vegetable protein that can replace the protein found in meat and is an essential source of energy. Compared to real meat, soy meat loses in some aspects (for example, in taste), but for some it may be more beneficial [7].

Soy meat is also healthier than foods like sausages or hamburgers, which are high in unsaturated fat and salt. In addition, this product prevents oncological, cardiovascular diseases, improves brain function.

Soy meat is actively used in vegetarian cuisine and is a complete source of protein and important micronutrients for those people who have given up meat or even all animal products. In the fall of 2015, the World Health Organization included red meat in the group of crustacean foods. This effect of meat on the body has been scientifically proven by many years of experiments. Therefore, soy meat is a great reason to abandon a potentially dangerous product without losing its taste.

Products of high culinary readiness such as pates are of higher demand. The presence of plant-based meat in pate significantly increases the functional and technological characteristics of the finished product.

The use of soy meat as an animal raw material, in combination with the protein of legumes, allows obtaining high-protein food products and simply expands the range of products. Soy pate is convenient to take with you on the road or on a picnic.

References

1. Kozmava A.V., Kasyanov G.I., Palagina I.A. "Technology of production of pates and minced meat" 2001. – p.207.
2. Prosekov A.Yu. "Technology of organizing the production of semi-finished products in centralized conditions" 2006. – p.136.
3. Krishtafovich V.I., Poznyakovskiy V.M., Kosnyreva L.M. "Merchandising and examination of meat and meat products" 2005. – p.320.
4. Filatov O.K. "Equipment for public catering establishments" 2004. - 240 p.
5. Babarin V.P. "Sterilization of canned foods" 2006. – p.312.
6. TC 10.89.19-845-37676459-2018 SOY BEAN MEAT
7. Antipova, L.V. Functional food products based on biomodified raw materials / Antipova L.V., Zubairova L.A., Gizatov A. Ya., Danyliv M.M. // Izvestiyavuzov. Food technology, 2005. -№4, - p.31-34.