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Influence of different concentrations of taro paste on the sensory characteristics of poultry meat sausages

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Abstract. Sausage products have a high fat content, which is not the most useful property for a sausage. The purpose of the study is the development of low-fat, nutritionally balanced sausage products. The object of the study was poultry sausages. The subject of research: changes in the quality characteristics of poultry sausage products conditioned by the use of different doses of taro puree, potato starch, and spices. Research methods: physical and chemical properties (moisture, pH, cooking losses, emulsion stability), colour and sensory characteristics of finished products. For the experiment, 500 g of minced poultry meat was prepared (the ratio of duck and chicken meat was 3:2), and 6 experimental groups (D1~D6) to which 0 g, 60 g (12%), 70 g (14%), 80 g (16%), 90 g (18%), 100 g (20%) of taro paste were added, respectively. The optimal amount of taro paste for duck-chicken sausage was determined by analysing sausage pH value, texture, shear stress, cooking loss, emulsion stability, colour, moisture distribution kinetics, and sensory evaluation. It was found that the addition of taro paste changes the structure of the poultry sausage and gives the sausage a unique flavour. Studies have shown that duck-chicken sausage with the addition of 80 g (16%) taro paste had the highest pH. Moisture content, cooking loss, firmness and chewability, and yellowness values were lower ($P<0.05$). Sausage brightness and redness values have been improved. It was found that duck-chicken sausages with 16% taro puree had the best colour, sensory texture and lower cooking losses. The results obtained allow the development of poultry sausage containing plant material and at the same time provide technical support for the use of taro paste in poultry sausage

Keywords: duck-chicken sausage, losses during cooking, quality characteristics, sensory evaluation, emulsion stability

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Introduction

Nowadays, there are more and more consumers in the world who prefer quality and safe products, balanced in composition and calories. Since duck and chicken meat are balanced in nutrients, rich in amino acids, and promote digestion and assimilation by the body, the development of sausages from these species is given much attention. Duck meat is a dark type of meat that is not dietary, unlike chicken, contains some of the healthy nutrients, but does not contain as much saturated fat as red meat and takes longer to digest [1]. Taro root is rich in dietary fibre (1.3 g/100 g) and high in protein (3.7 g/100 g). Their content in potato is only 0.75 g/100 g and 2.1 g/100 g respectively. Taro changes the nutritional composition and texture and flavour of poultry sausages.

Given the main trends in the food industry, the use of natural additives and the declared properties of taro paste can be considered a promising area of research. Therefore, the authors of this study focused on this segment, improving technology and expanding the range of duck and chicken sausages. Sausage is widely appreciated because it is rich in flavour, rich in protein, and is convenient to eat. The main raw materials of sausage are pork, beef, etc. It contains more fat, cholesterol and saturated fatty acids, and excessive intake may increase the risk of certain epidemic and chronic diseases [2; 3]. Therefore, adding plant raw materials to sausages to improve the structure of nutrients has become a focus of food researchers around the world. For example, mushrooms, celery, corn, oats, rice flour, crude fibre, etc. are added into sausage. These additives improve the quality of meat products. It has played a good role in increasing the dietary and nutritional properties of the product [3; 4].

The fat content of duck meat is moderate (about 7.5%), higher than in chicken, lower than in pork, and distributed more evenly in the whole body tissue. The fatty acids of duck meat are mainly unsaturated fatty acids and low-carbon saturated fatty acids. Therefore, it has a low melting point (about 35°C) and is easy to digest [5]. In China, duck meat processing has been a weak link for a long time. The duck industry is in the transition period from the segmentation stage to the finishing stage, and the processing level is still very low. C. Kunpeng *et al.* added edible fungi to duck emulsified sausage to improve its quality and nutritional properties. Compared with the results of the control group, the addition of mushrooms, truffles, and pine mushrooms increased the content of unsaturated free fatty acids and free amino acids in duck sausages, increased the umami taste, and at the same time inhibited the degree of fat oxidation [6].

Taro is a perennial crop of *Araceae* stem tubers. It contains low calories, a large amount of dietary fibre, starch, minerals, vitamins, amino acids and other nutrients [7; 8]. It has anti-tumour, anti-oxidation, anti-ageing properties and improves immunity [9-11]. Steamed taro is often served as part of Chinese breakfast. Taro is an alkaline food that can effectively regulate the body's acid-base balance. Therefore, it is a nutrient-rich, low-fat, and high-fibre edible and medicinal plant material. The addition of taro to sausages can change the nutritional content of the sausages and create a special product. X. Guo *et al.* [12] investigated the effect of different amounts of taro puree on the quality of pork balls. The results showed that the sensory evaluation and texture indexes such as hardness and elasticity of pork balls first increased and then decreased with the increase of the amount of taro puree. The addition of puree can change the quality of the pork balls. Therefore, it is very meaningful to develop a new product with duck meat as the main raw material and chicken and taro paste as auxiliary raw materials.

The purpose of this study was to explore the effect of the addition of taro puree, a plant raw material, in poultry sausages on the quality characteristics of sausages, and to provide a research basis for the next stage of product development.

Materials and Methods

Research trials have been completed in 2021 at the Institute of Food Science and Engineering Technology, Hezhou University, China. The Chinese teal's duck meat and chicken breast, taro, potato starch, spices, pepper, salt, Guilin Sanhua rice wine, and compound phosphate were purchased at the Hezhou city agricultural product market in China. Beet red came from the Food Engineering Research Institute of Hezhou University. The taro was washed, peeled, cut into pieces, steamed (30 min), cooled, mashed, and baked (60°C, 5-10 min) to determine the moisture content of 50% and set aside.

Processing of sausage: duck breast meat and chicken breast meat were chopped and mixed, and the ingredients (taro puree, potato starch, spices, ice water etc.) were mixed with minced meat, and the raw materials were put into the sausage casing with filling equipment and divided into sections with cotton thread. The product formula is shown in Table 1.

Table 1. *Duck-chicken sausage recipe with different additions of mashed taro instead of potato starch*

Ingredients (g)	Treatment					
	T1	T2	T3	T4	T5	T6
Duck meat	300	300	300	300	300	300
Chicken breast	200	200	200	200	200	200
Ice water	25	25	25	25	25	25
Onion and ginger Sauce	25	25	25	25	25	25
Rice wine	20	20	20	20		20
Corn starch	75	45	40	35	30	25
Taro puree	0	60	70	80	90	100
Other ingredients	14	14	14	14	14	14

Note: *Other ingredients include 7 g of salt, 1g of complex phosphate, 3 g of complex spices, 2 g of pepper and 1 g of beet red*

Determination of pH value: 5 g of the crushed sample was weighed into a sample tube, 20 mL of distilled water was added and stirred evenly, and placed it at room temperature for 30 min. A pH meter was used to measure the liquid in the middle layer.

Moisture content determination: a rapid moisture analyser was used and the temperature was set to 105°C. A preheated aluminium sample pan was put into the device, 1-2 g of the sample was weighed, and after closing the lid automatic heating was started to evaporate the water, repeated three times.

Cooking loss: the method was described by Jiang Shuai [13]. 35 g of minced meat was weighed into a 50 ml centrifuge tube and centrifuged (3,000 rpm, 5 min) to remove air bubbles in the tube. Then, it was heated in a water bath (75°C, 30 min), and the heated sample was cooled at room temperature for 1 hour, weighed after cooling, and its mass was recorded. The calculation of cooking loss is shown in equation (1):

$$Cooking\ loss\ (\%) = \frac{weight\ of\ raw\ meat\ batters\ (g) - weight\ of\ cooked\ meat\ batters\ (g)}{weight\ of\ raw\ meat\ batters\ (g)} \times 100 \quad (1)$$

Emulsion stability: the liquid lost during cooking (after the tube was centrifuged upside down for 40 minutes) was poured into a glass dish. Moisture loss was the weight of the liquid lost by cooking and drying after heating at 105°C for 16 hours, while fat loss was the mass of the sample remaining after the drying of the liquid lost by cooking [14]. The calculation of water loss and fat loss is shown in equations (2; 3):

$$Moisture\ loss(\%) = \frac{Weight\ of\ Cooking\ liquid - Remaining\ weight\ after\ heating}{Weight\ of\ raw\ meat\ batter} \times 100 \quad (2)$$

$$Fat\ loss(\%) = \frac{weighRemaining\ weight\ after\ heating}{Weight\ of\ raw\ meat\ batter} \times 100 \quad (3)$$

Colour: the sausage was removed from the casing, cooled to room temperature, and cut into 2 cm cylinders, and measured with A CR-400 colorimeter (calibrated with a white plate, L*= +97.83, a*= −0.43, b*= +1.98) using L* (brightness value), a* (redness value) value), b* (yellowness value).

Texture profile analysis: the test method was described by Yi. Chen *et al.* [15] with a slight modification. The sausage was removed from the casing, cut into a cylinder and placed on the TA-XT plus physical property tester for measurement. The test conditions were as follows: the probe was selected as P/5, the rate before the test was 5 mm/s, the test rate was 1 mm/s, test rate was 1 mm/s, the compression ratio was 50%, trigger force was 5 g.

Shear force: the test method was described by J. Song *et al.* [16] with a slight modification. The sausage was removed from the casing and cut it into 2 cm cylinders. The measurement parameters were set as: the probe model was HDP/BSW, and the pre-measurement rate was 2 mm/s, the test rate was 1 mm/s, the post-test rate was 2 mm/s, the measurement distance was 60.0 mm, and the trigger force was 10 g.

Moisture distribution: Low-field nuclear magnetic resonance (LF-NMR) was used to measure the free water, difficult-to-flow water, and bound water in the sausage samples, and the quality characteristics of the samples were analysed according to the relaxation time T2 and the peak area ratio of the three types of water. The main power switch was turned to preheat in advance, then, after turning on the computer host, monitor, and radio frequency, respectively, the standard oil sample was used for calibration. The sausage was cut into a cube, wrapped with plastic wrap, and put into the nuclear magnetic sampling tube to detect the sample relaxation time T2, and CONTIN was used to perform T2 inversion to obtain the corresponding relaxation times (T2b, T21, T22) and amplitudes (A2b, A21, A22) [17; 18].

Sensory evaluation: the sensory evaluation team consisted of 10 graduate students majoring in food science. The sausages were cut into cylinders with a thickness of 1 cm, and the judges scored the sausages in four aspects: colour, flavour, texture, and overall acceptability according to the sensory evaluation standard table, with a full score of 9 points. The sensory evaluation criteria are shown in Table 2 below.

Table 2. *Sensory Evaluation Standard*

Evaluation item	7~9 score	4~6 score	1~3 score
Colour	The colour is rose pink, the lustre is rich, and there is appetite	The colour is light pink purple, the colour is normal, and the appetite is normal	Brownish-yellow colour, dull, no appetite
Flavour	Basically no fishy smell, the taste is suitable, with the fragrance of taro paste	Slight fishy smell, moderate taste, light taro puree fragrance	Strong fishy smell, the taste is too light or too heavy
Texture	Good elasticity, uniform texture, less pores, smoother cut surface	Moderate elasticity, uniform texture, pores, smooth cut surface	Poor elasticity, loose texture, large pores, uneven cut surface
Integrated grade	Accept	General	Not accept

Statistical analysis: The measurement index was repeated 3 times, and the data results were expressed as mean ± standard deviation (X±S). Microsoft Excel 2017 software suite was used to draw charts.

Results and Discussion

The effects of different taro paste additions on the pH, moisture content, cooking loss, and emulsion stability of poultry sausages are shown in Table 3. Compared with the control group T1, the addition of taro paste had a significant effect on the moisture content, pH, cooking loss, and emulsion stability of duck sausage ($P<0.05$). With the increase of the amount of taro paste, the pH value of the sausage first increased and then decreased. When the amount of taro paste was 80 g (T4 group), the pH value of the sausage reached the highest; the moisture content of the sausage first decreased and then increased. When the amount of taro paste was 70 g (T3 group), the moisture content was the lowest, and there was no significant difference with the sausage moisture content of T4 group ($P>0.05$). The cooking loss and emulsion stability of sausage did not change regularly. When the addition amount was 80 g, the cooking loss, water loss, and fat loss reached the lowest value, which was significantly different from the control group ($P<0.05$), which may be related to the water absorption characteristics of dietary fibre in taro puree. When the amount of mashed taro was more than 80 g, the cooking loss of the sausage gradually increased, which indicated that the water retention of the sausage became poor, resulting in a serious loss of the sausage juice. The study by J. Li *et al.* [19] showed that when 10% taro was added to the pork patty, the cooking yield was the highest, and when the addition amount exceeded 10%, the steaming yield of the pork patty decreased. This shows that the addition of taro paste can effectively improve the quality of duck sausage. The T4 group (the addition amount of taro paste is 80 g) has the highest pH value, the lowest cooking loss rate, and the highest emulsification stability ($P<0.05$). The optimum addition amount of taro paste to duck sausage is 80 g.

Table 3. *Effects of different mashed taro instead of potato starch on pH, moisture content, cooking loss and emulsion stability of duck sausage*

Treatments	pH	Moisture content	Cooking loss, %	Water loss, %	Fat loss, %
T1	6.06 ± 0.15^{d}	64.69 ± 0.33^{b}	0.18 ± 0.01^{d}	0.15 ± 0.02^{e}	0.03 ± 0.02^{ab}
T2	6.07 ± 0.15^{cd}	67.20 ± 0.45^{a}	0.17 ± 0.01^{d}	0.16 ± 0.01^{d}	0.01 ± 0.01^{ab}
T3	6.10 ± 0.15^{b}	59.58 ± 0.73^{d}	0.25 ± 0.01^{c}	0.24 ± 0.01^{c}	0.02 ± 0.02^{ab}
T4	6.23 ± 0.15^{a}	60.54 ± 1.14^{d}	0.12 ± 0.01^{e}	0.11 ± 0.00^{f}	0.01 ± 0.01^{b}
T5	6.11 ± 0.10^{b}	62.99 ± 0.17^{c}	0.29 ± 0.00^{b}	0.26 ± 0.01^{b}	0.03 ± 0.01^{ab}
T6	6.09 ± 0.12^{bc}	63.07 ± 0.16^{c}	0.36 ± 0.02^{a}	0.32 ± 0.01^{a}	0.04 ± 0.01^{a}

Colour is an important parameter of sausage. The effect of different taro paste additions on the colour of duck sausage was shown in Table 4. The results showed that L* and a* first increased and then decreased ($P<0.05$), while b* decreased first and then increased ($P<0.05$) with the increase of taro puree. It can be seen from the results that adding 80 g of taro paste (T4 group) can significantly increase the brightness value L* and redness value a* of duck sausage, and reduce the yellowness value b* of sausage, which shows that adding a certain amount of taro paste can significantly increase the brightness of duck sausage. This is conditioned by the decrease in colour brightness caused by the presence of purple fibrous filamentous substances in areca taro [20].

Table 4. *Effect of different taro paste additions on the colour of duck sausage*

Treatments	L*	a*	b*
T1	56.32 ± 0.05^{d}	8.28 ± 0.20^{c}	11.14 ± 0.12^{ab}
T2	60.31 ± 0.14^{c}	10.20 ± 0.11^{b}	11.42 ± 0.24^{ab}
T3	62.59 ± 0.96^{a}	10.32 ± 0.25^{b}	11.66 ± 0.59^{a}
T4	62.46 ± 0.50^{ab}	11.29 ± 0.09^{a}	10.32 ± 0.40^{c}
T5	61.68 ± 0.24^{b}	10.98 ± 0.39^{a}	10.78 ± 0.13^{bc}
T6	59.59 ± 0.41^{c}	10.20 ± 0.29^{b}	11.13 ± 0.40^{ab}

Compared with the control group T1, the addition of taro paste had a significant effect on the hardness, stickiness, and chewiness of duck sausage ($P<0.05$), but had no significant effect on elasticity, cohesion, and recovery ($P<0.05$). The findings obtained by X. Guo *et al.* [12] showed that the addition of taro paste had a great influence on the stickiness and chewiness of taro meatballs, but had no significant change in springiness, hardness, and cohesion. Compared with the control group, the hardness, stickiness, and chewiness of the sausage first decreased and then increased with the increase of the amount of taro paste, while the elasticity, cohesion, and recovery did not change significantly. It shows that the addition of taro paste can effectively reduce the hardness, stickiness, and chewiness of duck sausage. The duck sausage in group T4 (the addition of taro paste is 80 g) is firm and elastic, and has the best texture and taste.

Table 5. *Effects of different taro paste additions on texture properties of duck sausage*

Treatments	Hardness	Springiness	Cohesiveness	Gumminess	Chewiness	Resilience
T1	9,564.08 ± 54.82^{a}	0.92 ± 0.05^{ab}	0.82 ± 0.04^{a}	7,884.15 ± 441.72^{a}	7,222.20 ± 753.52^{a}	0.46 ± 0.03^{a}
T2	7,395.92 ± 68.39^{b}	0.94 ± 0.03^{a}	0.79 ± 0.07^{a}	5,874.45 ± 447.70^{b}	5,515.97 ± 502.21^{b}	0.43 ± 0.04^{a}
T3	7,261.53 ± 54.98^{b}	0.88 ± 0.03^{ab}	0.84 ± 0.04^{a}	6,114.56 ± 286.59^{b}	5,368.97 ± 414.37^{b}	0.45 ± 0.03^{a}
T4	5,284.02 ± 106.95^{e}	0.86 ± 0.02^{b}	0.82 ± 0.04^{a}	4,338.90 ± 215.08^{d}	3,712.84 ± 223.07^{d}	0.44 ± 0.03^{a}
T5	5,522.35 ± 81.03^{d}	0.87 ± 0.03^{ab}	0.81 ± 0.04^{a}	4,453.19 ± 272.37^{d}	3,871.33 ± 303.49^{cd}	0.42 ± 0.03^{a}
T6	6,277.13 ±157.44^{c}	0.91 ± 0.05^{ab}	0.83 ± 0.07^{a}	5,176.56 ± 339.22^{c}	4,719.49 ± 571.30^{bc}	0.42 ± 0.05^{a}

In addition, the shear force value is an important indicator for evaluating the tenderness of meat and meat products, and the smaller the value, the better the tenderness of meat. As can be seen from Figure 1, compared with the control group T1, the shear force of the sausage showed a trend of first decreasing and then increasing with the increase of the amount of mashed taro ($P<0.05$), indicating that the mashed taro can improve the sausage within a certain range of addition, but it will reduce the tenderness of the sausage beyond a certain range. The results showed that with the addition of 80 g of taro puree (T4 group), the shear force of the sausage was the lowest, indicating that adding 80 g of taro puree could make the sausage tenderness the best, which was consistent with the measurement results of texture. The water distribution results of the sausage after adding the taro paste were shown in Figure 2.

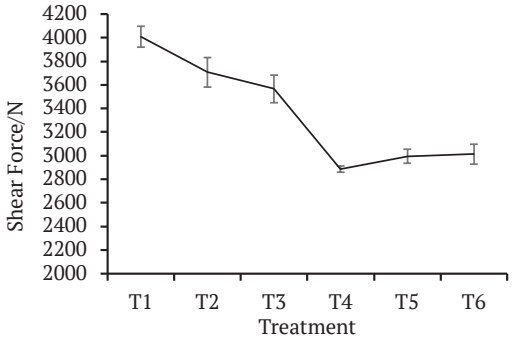

Figure 1. The effect of different taro paste additions on the shear force of sausages

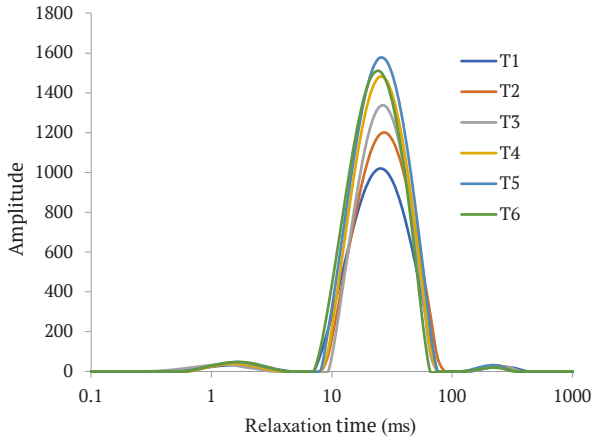

Figure 2. The results of the effect of adding taro paste on the moisture distribution of sausages

It can be seen from Figure 2 that the duck sausage has 3 peaks, and the 3 peaks from left to right are bound water (T2b), difficult-to-flow water (T21), and free water (T22). Compared with the control group T1, different additions of taro paste can change the internal water distribution of the sausage. The bound water relaxation time of the T3 group shifted towards the longer relaxation time, while the bound water relaxation time of the T2, T4, T5, and T6 groups all shifted towards shorter times, among which the T4 group had the shortest relaxation time for bound water, which indicated that the water was tightly bound to the protein and was not easily lost. It can be seen from the peak area of the difficult-to-flow water that the non-flowable water content of the sausage in the experimental group was higher than that in the control group. The content of flowing water was not a significant change in the relaxation time of free water, which indicated that the addition of taro paste changed the bound water and difficult-to-flow

water in the sausage, so that the water in the sausage was tightly combined with the protein. Yi. Chen *et al.* used the pre-emulsion to replace the fat in the frankfurter sausage. The results also showed that the three water relaxation times shifted towards shorter relaxation times, which also showed that the original non-flowing water in the sausage was more closely combined with the protein in the meat [15].

The results of the sensory evaluation of sausages are shown in Table 6.

Table 6. *Effect of taro paste on the sensory evaluation of sausage*

Treatments	Colour	Flavour	Texture	Integrated grade
T1	5.87 ± 0.15^{d}	6.47 ± 0.21^{d}	6.43 ± 0.12^{d}	6.77 ± 0.12^{c}
T2	6.63 ± 0.21^{c}	6.93 ± 0.15^{c}	6.87 ± 0.21^{bc}	7.23 ± 0.21^{b}
T3	6.97 ± 0.15^{b}	7.37 ± 0.12^{b}	7.13 ± 0.15^{b}	7.50 ± 0.20^{b}
T4	7.57 ± 0.21^{a}	8.07 ± 0.21^{a}	7.77 ± 0.25^{a}	8.13 ± 0.15^{a}
T5	7.13 ± 0.15^{b}	7.70 ± 0.20^{b}	7.03 ± 0.15^{b}	7.40 ± 0.20^{b}
T6	7.03 ± 0.21^{b}	7.57 ± 0.21^{b}	6.67 ± 0.21^{cd}	7.23 ± 0.15^{b}

The sensory evaluation of sausage showed a trend of first increasing and then decreasing with the increase of taro puree ($P<0.05$), and the sausage in the experimental group (T4) with the addition of 80 g taro had the highest sensory evaluation score.

When the amount of mashed taro added is low, the flavour of the mashed taro in the sausage is too light, and the fragrance of mashed taro can hardly be felt, with a heavy fishy smell and more pore looseness, decreased elasticity, and more pores. When the amount of taro puree added was 80 g, the taro puree in the sausage had a moderate aroma, less fishy smell, firm texture, better elasticity, and higher overall acceptance. It shows that the moderate amount of taro paste can significantly improve the sensory quality of duck sausage.

Conclusions

Excessive nutrition accelerates the occurrence of cardiovascular and cerebrovascular diseases. Reducing the fat content and improving the nutrient content of food is a research hotspot. The research focus of developing a nutritious sausage product is to add taro, a nutritionally balanced plant material rich in dietary fibre, to duck and chicken sausages. This study paid more attention to the characteristics of sausages while changing the composition of raw meat and increasing dietary fibre to change the nutritional composition.

The effect of different taro paste additions on the quality of duck sausage was investigated, and the duck sausage was evaluated by analysing the sausage pH, texture, shear force, cooking loss, emulsion stability, colour difference, sensory evaluation, and moisture distribution dynamics. It was determined that the optimum addition amount of taro paste was 16% (80 g/500 g poultry) and duck-chicken sausage had the highest pH value, and the moisture content, cooking loss, hardness and chewiness, and yellowness value were significantly reduced ($P<0.05$), the brightness value and redness value of the sausage were improved, and the sausage obtained good colour and taste. The findings can provide reference for the development of new poultry sausage products.

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Вплив різних концентрацій пасти таро на сенсорні характеристики ковбас з м'яса птиці

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Анотація. Ковбасні вироби мають високий вміст жиру, що є шкідливою властивістю ковбаси. Мета роботи – розробка нежирних, поживно збалансованих ковбасних виробів. Об'єктом дослідження були взяті ковбасні вироби з м'яса птиці. Предмет досліджень: зміни якісних характеристики ковбасних виробів з м'яса птиці від використання різних доз пюре таро, картопляного крохмалю, спецій. Методи досліджень: фізико-хімічні властивості (волога, pH, втрати при варінні, стабільність емульсії), колірні та сенсорні характеристики готових продуктів. Для досліду готували фарш з м'яса птиці по 500 г (співвідношення м'яса качки та курки 3:2), і 6 дослідних груп (Д1~Д6) до яких додавали 0 г, 60 г (12 %), 70 г (14 %), 80 г (16 %), 90 г (18 %), 100 г (20 %) пасти таро відповідно. Оптимальна кількість пасти таро до качино-курячої ковбаси була визначена шляхом аналізу значення pH ковбаси, текстури, напруження зсуву, втрати при варінні, стабільності емульсії, кольору, кінетики розподілу вологи та сенсорної оцінки. З'ясовано, що додавання пасти таро змінює структуру ковбаси з птиці та надає ковбасі неповторний аромат. Дослідження показали, що качино-куряча ковбаса з додаванням 80 г (16 %) пасти таро мала найвищий pH. Вміст вологи, втрата при варінні, твердість і жувальна здатність, а також значення жовтизни були нижчі ($P < 0,05$). Значення яскравості та червоності ковбаси було покращено. Обґрунтовано, що сосиски з качино-курячих м'яса з додаванням 16 % пюре таро мали найкращий колір, сенсорну оцінку текстури та менші втрати при варінні. Показано, що отримані результати дослідження дозволяють розробити ковбасу з птиці, що містить рослинний матеріал, і в той же час забезпечити технічну підтримку для застосування пасти таро в ковбасі із м'яса птиці

Ключові слова: качино-куряча ковбаса, втрати за кулінарної обробки, якісні характеристики, сенсорна оцінка, стабільність емульсії