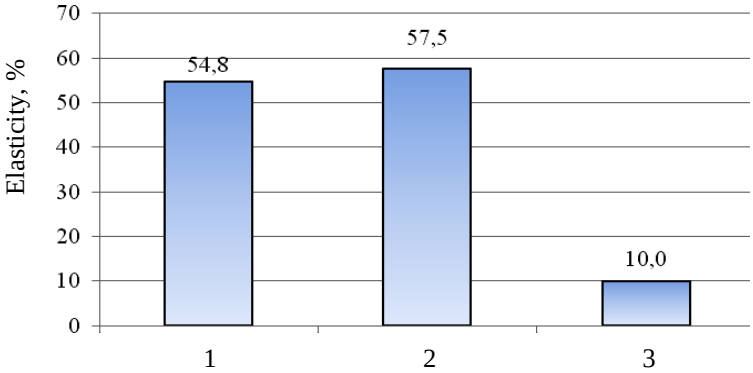

Fig. 1. The results of the research of dough elasticity:
1 – Studied sample; 2 – Reference sample cooked with citric acids;
3 – Reference sample cooked without citric acids

According to expectations, the reference sample without acids is characterised by low elasticity. Its area enlarged by 10,0% after taking the weight off, which is 5,8 times lower than has the sample cooked with citric acid. As we can see from the figures, elasticity of dough with whey is only 4,8% lower than elasticity of the reference sample cooked with citric acid. It constituted 54,8% which is in the range of experimental uncertainty.

So, elasticity equal to semi-finished dough made under standard technology, and product yield and moisture content of the goods made using such dough, are preserved. Thus, making out a conclusion of the study, it is possible to say that the positive impact of replacing water and citric acid by milk whey in production technology of semi-finished unfermented flaky dough is proved.

STUDY OF THE INFLUENCE OF HIGH PRESSURE AND THE INTRODUCTION OF SOY PROTEIN ISOLATE ON SOME PROPERTIES OF PORK MEAT BATTERS

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High pressure treatments of sausage batters were carried out in a 0.3 L capacity high pressure vessel (S-FL-850-9-W/FPG5620YHL, Stansted

Fluid Power Ltd., Stansted, UK) which has a maximum pressure limit of 900 MPa and can work in the temperature range of –20 °C to +90 °C with a thermo-stated jacket.

Samples were assessed for texture profile analysis (TPA) according to the procedure of, using a texture analyzer TA-XT plus (Stable Micro Systems Ltd., UK). The indicators of hardness, springiness, cohesiveness and chewiness were determined. Each measurement was replicated 5 times. Low field NMR relaxation measurements were carried in the NMR probe of a Niumag Pulsed NMR analyzer (PQ001, Niumag Electric Corporation, Shanghai, China).

Raw pork batters were prepared as follows: 400 g pork meat, 80 g pork back-fat, 70 g ice water, 10 g NaCl; sample C2 had 10 g soy protein isolate (2%); sample C3 – 20 g soy protein isolate (4%).

A higher cooking yield of pork batters reflects a better water holding capacity. Compared with the C1, all the cooking yield of pork batters with various amount of soy protein isolate were increased significantly ($P < 0.05$), but the cooking yields of C1 and C2 were no significantly ($P < 0.05$) differences. The reason might be that added the 2% soy protein isolate could hold the water of pork batters very well, so increased the soy protein isolate addition could not improved the cooking yield. The emulsifying activity of 11S globulins was much significantly improved at 200 MPa, that enhanced the water holding capacity of soy protein isolate. The addition of soy protein isolate could improve the cooking yield of pork batters.

The texture of cooked pork batters were affected significant ($P < 0.05$) by high pressure and soy protein isolate combinations. Compared with the C1, all the hardness, springiness, cohesiveness and chewiness of pork batters with various amount of soy protein isolate were increased significantly ($P < 0.05$), except the springiness of C3. Compared with the 4% (C3), the hardness, springiness, cohesiveness and chewiness of pork cooked batter with 2% soy protein isolate (C2) were significantly increased ($P < 0.05$). High pressure processing induced texture modifications have been used to affect myofibrillar proteins and their gel-forming properties, raising the possibility of the development of processed comminuted meat products. Over 200 MPa treatment, the protein extractability was decreased significantly in meat batters, and caused protein denaturation and/or aggregation, which limited their functionalities. Although the soy protein isolate have has a good water and fat holding capacity, excellent gelling and structuring behaviour, some paper have reported that excessive added the soy protein isolate could lower the texture of meat batters. Therefore, the pork cooked batter with 2% soy protein isolate (C2) had the best texture.

The effects of relaxation time and peak ration of cooked pork batters by high pressure processing with different soy protein isolate were determined. There was three characteristic peaks in the cooked pork batters, which was named as T_{2b}, T_{21} and T_{22}, respectively. T_{2b} is assigned to water tightly associated to protein and macro-molecular constituents, the relaxation population centered at approximately 0–10 ms in the cooked pork batters. The relaxation population of T_{21} is centered at approximately 10–100 ms, which is a major component and considered to intra-myofibrillar water and water within the protein structure. T_{22} is corresponds to extra-myofibrillar water and centered at approximately 100–400 ms. Compared with the C1, the initial relaxation times of T_{2b}, T_{21} and T_{22} were quicker ($p < 0.05$) in the C2 and C3, the result indicated that the cooked pork batters made with various amounts of soy protein isolate were bound tightly, because the changes of fast relaxing protein and slowly relaxing water protons. These also were accordance with the changes of texture and cooking yield. The reason was possible that the soy protein isolate had excellent gelling and structuring behaviour, then a better gel structure of cooked pork batters by high pressure processing was formed when added the soy protein isolate. The emulsifying activity of 11S globulins of soy protein isolate was much significantly improved at 200 MPa, through the changes of protein solubility, surface hydrophobicity, free SH content and secondary structure. All the peak rations of T_{2b} were no significant differences ($p > 0.05$), C2 and C3 had the smallest peak rations of T_{22}, and had the largest peak ration of T_{21}.

Added the soy protein isolate and high pressure processing combinations could increase the protein content, more meat proteins can become available for gel formation of the meat matrix. These caused the water tightly associated to protein and macromolecular constituents decreased, and improve water holding capacity of cooked meat batters. Therefore, added the soy protein isolate increased the water holding capacity, and improved the texture of cooked meat batters.

УДОСКОНАЛЕННЯ ТЕХНОЛОГІЇ ОТРИМАННЯ ПОВІТРЯНИХ СНЕКІВ ІЗ ЗЕРНОВОГО СОРГО

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Сьогодні фахівці все частіше шукають шляхи вдосконалення існуючих технологій за рахунок використання нових методів обробки зернової сировини. Одним із шляхів вирішення цієї проблеми є