

EVALUATION OF NUTRITIVE AND EDIBLE VALUE IN SICHUAN SAUSAGE OF PORK—RABBIT MEAT

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SUMMARY: Sichuan sausage is one of the most famous meat products in China. On the basis of technology of Sichuan sausage, we have manufactured traditional Sichuan sausage and different kinds of Sichuan sausage with 20%, 35%, 40% and 70% rabbit meat substituting for pork. Their sensory characteristics and major nutrients have been analysed. It designated that the protein content of Sichuan sausage of pork-rabbit meat was 2.58%—4.63%, significantly higher ($P < 0.01$) than that of sichuan sausage traditionally produced with pork and the fat content was 1.29%—3.41% a little lower ($P > 0.05$). Its appearance, colour, tissue state, cutting property, flavour and taste etc. were also improved. Furthermore, the best was that with 20%—40% rabbit meat. It had higher nutritive and edible value.

INTRODUCTION: Sichuan sausage is one of the most famous meat products in China. It's a traditional special local meat product classified as Intermediate Moisture Food (IMF) in sichuan province. It is very popular among extensive consumers with the advantages of sweet smelling aroma, little salty, delicacy and hot taste. For sichuan sausage traditionally only pork is used as major raw material with the 5-spice powder additives. Rabbit meat is a kind of meat containing higher protein, lower fat and cholesterol, nourishing delicate thin flesh, easy to digest and is becoming a kind of health food loved very much by consumers. On the basis of studying different sichuan sausage produced with different percentages of rabbit meat substituting for pork, we are able to discuss nutritive and edible value in sichuan sausage of pork-rabbit meat.

MATERIALS AND METHODS: Fresh meat of pork and rabbit were obtained and cooled for about 12 hours. Then they were divided into 5 groups according to different percentage of 0%, 20%, 35%, 40% and 70% of rabbit meat substituting for pork (Table 1). Group A was traditional sichuan sausage, the control group. Others were experiment groups.

Table 1. Different content of pork and rabbit meat in groups (%)

Items	A	B	C	D	E
Rabbit	0	20	35	40	70
Pork lean	70	50	35	30	0
Pork backfat	30	30	30	30	30

For every group of sichuan sausage produced by the technology of traditional sichuan sausage, their sensory characteristics and chemical compositions were analysed within one week. With reference to "Hygienic standard of chinese sausages" (GB 10147-88), their sensory characteristics for every group were evaluated in raw and cooked sausage from respects of appearance, tissue state, colour, taste and flavour.

According to chinese hygienic standard of food and the methods of food hygienic analysis (physical and chemical section) (GB 5009-85), their chemical compositions were determined.

The analysis of variance was used to compare the results obtained sensory evaluation and chemical compositions.

RESULTS AND DISCUSSION: Table 2 is a list of the evaluation score of sensory characteristics for every group of sichuan sausage.

Table 2. Evaluation score of sensory characteristics for every group of sichuan sausage

Group	Appearance 10	Tissue state 15	Colour 20	Smell 15	Taste 40	Total 100
A	8.0	12.3	12.6	12.8	29.5	75.2
B	8.4	13.2	14.4	11.6	33.5	81.1
C	8.6	13.1	16.1	13.1	34.9	85.8
D	8.6	11.8	15.6	12.9	32.6	81.5
E	8.7	12.4	15.8	11.8	30.8	79.5

The sensory attributes for which no statistically significant differences ($P > 0.05$) were found related in general to the appearance, tissue state, colour, smell and taste. However, it was observed that the tissue state, the ability of cut in piece in the groups containing rabbit meat were improved obviously than group A and the colour were rose-red and bright. Group B, C and D, which contain 20%, 35% and 40% rabbit meat respectively, were more delicious and better obviously than group A and E. Group E containing 70% rabbit meat was not so good in colour, but its taste of rabbit was more clear.

No statistically significant differences ($P > 0.05$) in a total sensory score.

Table 3. Contents of protein, fat and moisture in Groups (%)

Group	Protein	Fat	Moisture
A	23.73 c B	45.94	23.52 a
B	26.31 b A	44.22	22.42 a b
C	27.75 ab A	44.65	21.43 a b
D	28.14 a A	43.30	20.83 b
E	28.36 a A	42.53	20.70 b

(1) A-B: Means within a column not sharing a common superscript letter are very significantly different ($P < 0.01$).

(2) a b c: Means within a column not sharing a common superscript letter are significantly different ($P < 0.05$)

The protein content of group B, C, D, E which contain respectively 20%, 35%, 40% and 70% rabbit meat was increased very significantly by 2.58%—4.63% than that of group A, not containing rabbit meat ($P < 0.01$). Furthermore, the protein content was increased while the rabbit meat percentage was increased, The protein content of group E containing 70% rabbit meat and group D containing 40% rabbit meat was increased significantly by 1.83% and 2.05% than that of group B containing 20% rabbit meat, respectively ($P < 0.05$).

Although the contents of fat and moisture were little 1.29%—3.41% and 1.1%—2.82% decreased while the percentage of rabbit meat increased, the fat content of each group was decreased and but no statistically significant differences ($P > 0.05$) except only that the moisture content of group D and E containing 40% and 70% rabbit meat respec-

tively was decreased significantly than that of group A ($P < 0.05$).

CONCLUSIONS: The results of this experiment show sichuan sausage of pork-rabbit meat containing 20%—70% rabbit meat can increase very significantly the protein content than traditional sichuan sausage by 2.58%—4.63% ($P < 0.01$), and the protein content increased while rabbit meat percentage increased, but the contents of fat and moisture decreased a little. In a word, sichuan sausage with over 20% rabbit meat had higher nutritive value.

This experiment also shows that sichuan sausage of pork-rabbit meat not only had the advantages of sweet smelling aroma, little salty, delicacy and hot taste as traditional sichuan sausage but also was improved in the respects of the tissue state, cutting ability and colour etc. . Therefore, sichuan sausage of pork-rabbit meat had better sensory characteristics and edible value.

Synthesized from the nutritive and edible value, sichuan sausages of pork-rabbit meat with 20—40% rabbit meat were more favourable, especially the best was sichuan sausage with lean meat of pork and rabbit each half, i. e. 35% each.

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