Mechanism of the production of flavor compounds in the curing-process of meat products

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Summary

In this study, the changes in flavor compounds during the curing-process of meat products were examined, and the proteases contributing to their productions were identified.

Peptides increased during the storage of pork with or without curing agents (2% NaCl and 0.1% KNO_3). Its increment during the storage of pork with curing agents was smaller than that without curing agents. Calpain involved in the increase of peptides during the storage of meats was not inhibited by both curing agents. A curing agent, NaCl, has been reported to inhibit the activities of cathepsins B and L contributing to the peptides increase. The decrease of their activities in the presence of NaCl seems to result in the depression of the peptides increase during the storage of pork with curing agents.

Free amino acids increased during the storage of pork with or without curing agents. Its increment during the storage of pork with curing agents was smaller than that without curing agents. However, there were scarcely differences in the pattern of the increase of free amino acids between porks with and without curing agents, indicating that the increase of free amino acids during the curing-process of meat as well as during the storage of meat is caused by aminopeptidases C and H.

Five aminopeptidases were detected on ion-exchange chromatography of the extract from pork before and after storage. The activities of these aminopeptidases in pork decreased after storage with and without curing agents. However, the intensities of aminopeptidase activities in the pork stored with curing agents did not differ from those in the pork stored without curing agents at all. Furthermore, these aminopeptidase activities were shown to be appreciably inactivated by the curing agent, NaCl. Only 50-55 % of the original aminopetidase C activity toward Lys-β-naphthylamide (Lys-NA) was recovered in the presence of 2% NaCl. Aminopeptidase H was also affected by 2% NaCl, recovering around 66-68% of its original activity toward Leu-NA. From these results suggested that the inactivation of aminopeptidases C and H by NaCl caused the depression of the increase of free amino acids during the storage of pork with curing agents.