

## Comparison of DMHF generated by the Maillard reaction in various cooked meats

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**Introduction:** The Maillard reaction, a critical chemical reaction that occurs during cooking, generates numerous chemicals which affect the sensory properties of meats. 2,5-Dimethyl-4-hydroxy-3(2H)-furanone (DMHF) is one of the major odor compounds generated by the Maillard reaction and affects the palatability of cooked meats [1]. Recently, we reported that the inhalation of DMHF induces physiological activities via the autonomic nervous system [2,3]. Therefore, the generation of DMHF during the cooking of meats is related to improvement of palatability and functionality. Although some studies have been reported that DMHF is detected in cooked beef [4,5], there have been few studies of other animal species and meat parts. It is also unclear that the factors affecting DMHF generation in meats. The aim of this study was to compare DMHF in various cooked meats and elucidate the factors contributing to DMHF generation.

**Materials and methods:** Three individual meat samples of Japanese black cattle beef, Australian beef, pork, chicken (parts: round, loin/breast) were heated at 230°C for 90 seconds on both sides. The odor compounds in cooked meat were collected by solvent extraction method and were then subjected to GC/MS analysis. The amount of DMHF in cooked meats was compared by animal species or meat parts. Moreover, free amino acids and glucose in all meats were measured Maillard reaction substances.

**Results:** DMHF was detected in all cooked meats. In round, the amount of DMHF significantly varied according to the animal species. DMHF was the highest in Japanese black cattle beef and then followed by Australian beef, pork, and chicken. DMHF of Japanese black cattle in loin was also higher than other species. Furthermore, the comparison between meat parts showed significant differences among most animal species. Although there was no difference in free amino acid contents, a significant correlation was found between DMHF and glucose in round. Moreover, the amount of DMHF in cooked meats was increased by the addition of glucose. These results suggest that DMHF generation in round was affected by glucose contents.

**Conclusion:** DMHF generated by the Maillard reaction during the cooking of meats contributes to the development of palatability and functionality in cooked meats. The DMHF generation was varied according to the animal species and meat parts. Moreover, DMHF was correlated with the glucose content in round. From these results, DMHF generation during cooking of meats would be regulated by glucose.

### Literature:

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