



Comparison of Meat Quality Characteristics between the Hinai-jidori and Broiler Chicken

K. Rikimaru^{1,4}, D. Takahashi¹, M. Komatsu¹, J. Ishizuka¹, R. Kiyohara², S. Yamaguchi², and H. Takahashi³

¹Akita Prefectural Agriculture, Forestry and Fisheries Research Center Livestock Experiment Station, ²J-OIL MILLS, INC., ³National Institute of Livestock and Grassland Science, ⁴Graduate School of Agricultural Science, Tohoku University



INTRODUCTION

The Hinai-dori is a breed of chicken native to Akita Prefecture, Japan. A cross between the Hinai-dori and Rhode Island Red breeds has been commercialized as the Hinai-jidori chicken, and is one of the most popular brands in Japan. The meat of Hinai-jidori chicken is considered much more palatable than of typical broilers. To identify the candidate substances influencing the palatability of chicken meat, meat quality characteristics of the Hinai-jidori and broiler chickens were compared.

MATERIAL AND METHODS

The Hinai-jidori and broiler chickens hatched on the same day in the same incubator. They were divided into groups of 1) 8-wk-old broilers, 2) 22-wk-old broilers, and 3) 22-wk-old Hinai-jidori. They were fed the same diets for 8 and 22 weeks and reared under the same condition. After slaughter, the general biochemical components, free amino acids (FAA), inosine 5'-monophosphate (IMP), and fatty acids of the thigh meat of the three groups were measured. Then, cooked mince and soup made from the thigh meat of 22-wk-old Hinai-jidori and 22-wk-old broiler chickens were sensorially evaluated.

RESULT AND DISCUSSION

The level of Glutamic acid in the meat of Hinai-jidori chickens was significantly higher than those of 22-wk-old broilers. However, the difference in the umami intensity between the 2 groups were less than 11%, which was less than differential threshold of umami (21%). On the other hand, a significant difference in arachidonic acid (ARA) content was observed between the Hinai-jidori chickens and broilers (8-wk and 22-wk-old) (Table.1).

Moreover, sensory panelists significantly preferred the cooked mince and soup of the Hinai-jidori chickens over those of 22-wk-old broilers. These data suggest that ARA is a candidate substance related to the palatability of chicken meat (Fig.1).

Table.1 Comparison of thigh meat quality analyses of broilers and Hinai-jidori chickens

Item	8-wk-broiler	22-wk-broiler	22-wk-Hinai-jidori
Glutamic acid, mg/100	38.8 ^a	23.6 ^c	31.2 ^b
Total FAA, mg/100g	341.8 ^a	242.6 ^b	220.6 ^b
IMP, mg/100g	131.2 ^a	143.6 ^{ab}	156.6 ^b
Fatty acid, %			
Palmitic acid	21.7	21.5	20.7
Palmitoleic acid	4.1 ^a	2.8 ^b	3.0 ^b
Oleic acid	43.3	43.2	43.7
Linoleic acid	17.1	18.1	17.5
Arachidonic acid	1.4 ^b	1.3 ^b	1.9 ^a

P<0.05

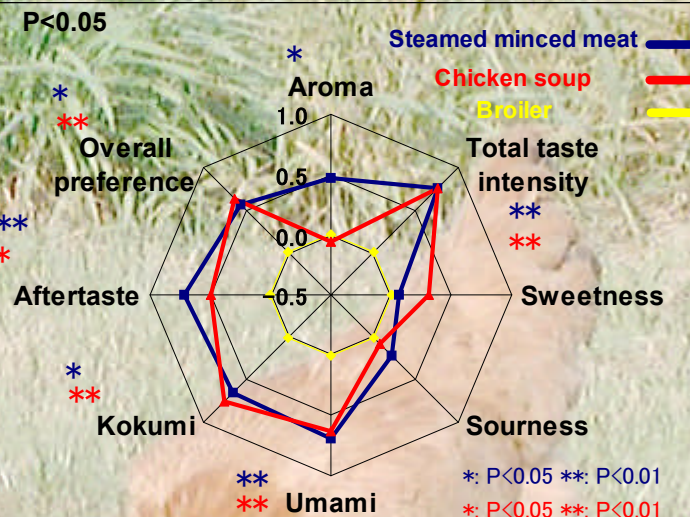


Fig.1 Sensory evaluation of steamed minced meat and chicken soup of 22-wk-old broilers and Hinai-jidori chickens

CONCLUSION

We conclude that ARA content is a characteristic feature of Hinai-jidori chicken thigh meat and **ARA may be related to the palatability of the meat**. Further research is needed to better understand the relationship between ARA content and the palatability of chicken meat.