PALATABILITY: A NEW BREEDING TARGET OF COMMERCIAL CHICKENS PRODUCED FROM INDIGENOUS GENETIC RESOURCES IN JAPAN

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In Japan, the majority of chicken meat is produced from fast-growing broiler chickens. Because native Japanese breeds have low meat yield and egg production, many of these breeds are in danger of disappearing. Recently, the palatability of meat produced from native chickens has been reevaluated in the Japanese market. Most high-quality chickens, “Jidori” in Japanese, were initially bred by crossing native Japanese breeds with highly selected lines with rapid growth rate or relatively high egg production. For example, the Hinai-jidori chicken, a cross between Hinai-dori (a breed native to the Akita Prefecture of Japan) sires and Rhode Island Red dams, is a popular brand of Jidori chicken. Japanese consumers recognize that the meat from Jidori chickens is more palatable than that from broiler chickens; however, the reason behind this rich palatability of Jidori meat has not been elucidated.

Recently, we found that 1) the high arachidonic acid (ARA, C20:4n-6) content is a characteristic feature of Hinai-jidori meat, 2) chicken meat containing higher levels of ARA is more palatable than that containing low ARA content, and 3) single-nucleotide polymorphisms in the fatty acid desaturase 1 and 2 gene cluster are associated with ARA content in meat. Our data predict the beginning of a new era that the palatability of commercial chicken meat can be designed according to a plan. Thus, we are testing whether the palatability of Jidori meat can be improved by using molecular breeding and marker-assisted selection techniques.