

ABSTRACT

Breed differences in macrophage infiltration and senescence state in adipose tissues of Wagyu and Holsteins

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Obesity stimulates the macrophage infiltration and senescence state in adipose tissues of humans and rodents. The adipogenesis capacity of Japanese Black cattle (Wagyu) is higher than that of Holsteins. We hypothesized that breed differences between Wagyu and Holsteins may affect the level of macrophage infiltration and senescence state in adipose tissues. The macrophage infiltration, senescence marker gene expression and activity of senescence-associated β -galactosidase (SA- β gal) in visceral and intramuscular adipose tissue of Wagyu were higher than those of Holsteins. In contrast, there were no differences in macrophage infiltration, senescence marker gene expression and activity of SA- β gal in subcutaneous adipose tissue between the breeds. Expression of p53 gene, the master regulator of macrophage infiltration and senescence state, in visceral and intramuscular adipose tissue of Wagyu was higher than that of Holsteins. In contrast, there was no difference in the expression of p53 gene in subcutaneous adipose tissue between the breeds. These results suggest that breed differences in macrophage infiltration and senescence state in adipose tissues of Wagyu and Holsteins are affected by p53 expression.