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Study on the characteristics of yak meat in different domestic types and semi-wild yak in Qinghai Plateau

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Key words : amino acid, heavy metal, mineral element, residual pesticide, yak.

Introduction Yaks are mainly distributed in the Qinghai Tibetan Plateau, the so-called "non-pollution district" — an area with an altitude higher than 3,000m asl. There have been a relatively large amount of studies on the yak's conventional nutritional composition; however, few studies have reported overall nutritional composition, amino acid composition, and level of residual heavy metal or mineral elements in yak meat (Xie RQ et al 2004, Yan P et al, 1988). Also there has been no report comparing the nutritional value between the domestic and the semi-wild yak.

Materials and methods Nine domestic yaks over 6 years old, comprising five culling male and four culling female, were selected from Heimaha Township, Gonghe County near Qinghai lake ("Qinghai Lake" type) and Qumalai County ("Plateau" type). They were all in good health condition. No supplementary feed was provided. Three male semi-wild yaks aged 6 months old were obtained from DaTong Yak Farm, and all were in good health condition with natural grazing and with no supplement.

After slaughtering, 0.5 kg meat samples were taken from the front legs, rear legs and eye muscle in 12-13 ribs. The samples were collected and frozen. All samples were analyzed at Sichuan Academy for Agriculture, China.

Results The results showed that there are significant differences in content of cystine between "Plateau" type and "Qinghai Lake" type, between "Plateau" type and semi-wild yak, but no difference between "Qinghai Lake" type and semi-wild yak. There are obvious differences in content of histidine between "Plateau" type and "Qinghai Lake" type, but no difference between domestic and semi-wild yak. There are significant differences in content of magnesium between "Plateau" type and "Qinghai Lake" type, and between domestic and semi-wild yak. There are significant differences for the contents of copper, zinc, iron between "Plateau" type and "Qinghai Lake" type, between "Plateau" type and semi-wild yak. The contents of zinc, iron and sodium between domestic and semi-wild yak are also significant different. There are obvious difference for the content between plateau and around Qinghai lake type, between plateau and semiwild yak, significant difference between yak and semiwild yak. The residual heavy metals and residual pesticides are far below that allowed by the National Standard of China. Further, the data showed that cross-breeding with wild yak has not changed the quality in domestic yak meat.

Conclusions Yak meat from Qinghai Plateau has the characteristics of being non-polluted and rich in amino acids compared with other local cattle meat. The residual heavy metal and pesticide levels in yak meat are far below the National Standard of China.

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