



Tropentag, September 14-16, 2010, Zurich

“World Food System —
A Contribution from Europe”

Fat Quality and Intramuscular Fatty Acid Composition of Brahman × Thai Native and Charolais × Thai Native Crossbred Cattle

AMPHON WARITTHITHAM¹, CHRISTIAN LAMBERTZ², HANS-JUERGEN LANGHOLZ², WOLFGANG
BRANSCHIED³, MICHAEL WICKE², MATTHIAS GAULY²

¹Lampang Animal Nutrition Research and Development Center, Department of Livestock Development, Thailand

²Georg-August-Universität Göttingen, Department of Animal Science, Germany

³Max Rubner-Institute, Department of Safety and Quality of Meat, Germany

Abstract

Intramuscular (i. m.) fat contributes to quality of meat, including texture and flavour. I. m. fat content and its fatty acid composition are the major factors affecting human health. Fats of cattle meat are characterised by high saturated fatty acid (SFA) and low polyunsaturated fatty acid contents (PUFA) which is a risk factor for coronary heart disease for the consumers. On the other hand, meat containing high amounts of omega-3 PUFA and conjugated linoleic acid can be beneficial to human health, *e.g.* by reducing the rate of fat deposition and serum lipids. The objective of the present study was to determine the effects of genotype and slaughter weight on fat quality and i. m. fatty acid composition of Longissimus dorsi (Ld) muscle of Brahman × Thai native (BRA) and Charolais × Thai native (CHA) crossbred bulls fattened under practical farm conditions in Northern Thailand. In total 34 BRA and 34 CHA were randomly selected and slaughtered at either 500, 550 or 600 kg live weight. Carcass fat score, marbling score, contents of i. m. fat, triglyceride and cholesterol, and i. m. fatty acid composition of Ld muscle were determined. The results showed that CHA exhibited lower carcass fat scores, higher marbling scores and i. m. fat than BRA. Therefore, CHA may offer a better meat quality, especially with regard to tenderness and juiciness. However, triglyceride and cholesterol content was lower, C18:3 omega-3, C22:5 omega-3 and total omega-3 PUFA higher, and ratios of omega-6/omega-3 PUFA and C18:2 omega-6/C18:3 omega-3 lower in BRA. Compared to CHA, the fatty acid composition of BRA meat may benefit human health. Therefore, BRA should be used for fattening especially in pasture or extensive systems to produce “healthy beef” for an alternative market. Increasing slaughter weight from 500 to 600 kg had no effect on fat quality and i. m. fatty acid composition. Since the economical benefit increases with carcass weight, slaughter weights up to 600 kg can be recommended for both genotypes.

Keywords: Brahman, Charolais, fatty acid composition, slaughter weight