

## **Muscle glycogen repletion in 3 breeds of young cattle is not affected by energy intake**

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**Background** – An adequate level of muscle glycogen at the time of slaughter is essential for ensuring the production of premium quality meat, and minimising the incidence of dark cutting in beef. Therefore nutritional management procedures need to be established for cattle to maximise muscle glycogen concentration at slaughter.

**Objective** – To determine the impact of energy intake on rate of muscle glycogen repletion following exercise in Piedmontese, Wagyu, and Angus cross cattle.

**Design** – 56, 10 month old cattle, with either Piedmontese, Wagyu, or Angus sires were maintained for 8 weeks (including acclimation) on either roughage or concentrate rations prior to and following a single bout of exercise (13.5 km trot at 9 km/hr). Muscle biopsies were taken immediately before and after, and at 36 and 72 h after exercise for the determination of muscle glycogen concentration. Daily individual feed intakes were measured throughout.

**Outcomes** – Following exercise, rates of muscle glycogen repletion (mmol/L in 72 h) were 40% higher in Wagyu sired cattle ( $41.8 \pm 4.2$ ) than either Piedmontese ( $29.3 \pm 2.9$ ) or Angus ( $26.8 \pm 2.8$ ). Wagyu are noted for their propensity to store fat intramuscularly, this result supporting a general trend for increased substrate deposition (either fat or glycogen) in the muscle by this breed. Rates of muscle glycogen repletion were not affected by metabolisable energy (ME) intake (average =  $88.7 \pm 1.4$  MJ/hd/day) following exercise, contrasting with earlier studies (1).

**Conclusions** – In young cattle muscle glycogen repletion occurs independently of ME intake following exercise, and Wagyu replete faster than either Piedmontese or Angus cattle.

1. Gardner GE, McIntyre BL, Tudor G, Pethick DW (2001) *Aust J Ag Res* 52, 461-470.