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## Variation in subcutaneous fat composition of beef according to region of production

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Subcutaneous fat is part of the edible portion of “untrimmed” cuts and is a component of manufactured products. It is well established that feed alters fatty acid (FA) composition and major differences in feed base occur in equivalent production systems within northern and southern beef production regions, yet nutritional research has been conducted only on samples from southern Australia.<sup>(1,2)</sup> Consequently, data may not reflect what is produced in northern regions from the equivalent systems. Therefore, a study was conducted to determine whether differences in FA composition occur within fat from different production systems. Subcutaneous fat from carcasses were sampled from cattle finished on grass diets in the south ( $n = 130$ ) and north ( $n = 130$ ) and cattle finished on a feedlot ration for 70 days from southern ( $n = 128$ ) and northern ( $n = 135$ ) systems.<sup>(3)</sup> Once analysed, predicted means were calculated using linear modelling with region and production system fitted as fixed effects. For cattle finished on grass, saturated fatty acids (SFA) were significantly greater in fat from northern production systems at 28.9 g/100 g, while southern production systems contained 25.1 g/100 g (SE = 0.32). Concentrations of polyunsaturated (PUFA) also differed between regions with 1.62 g/100 g and 1.87 g/100 g from northern and southern systems, respectively (SE = 0.02). However, monounsaturated fatty acids (MUFA) did not significantly differ between regions with 35.4 g/100 g from northern systems and 35.5 g/100 g from southern systems (SE = 0.33). Although both SFA levels differed between northern and southern grain fed cattle, the differences have no practical implications given northern cattle had 27.2 g/100 g of SFA while southern cattle had 28.3 g/100 g of SFA (SE = 0.28). Similarly, the significant difference in MUFA between regions did not relate to a practical difference with a predicted mean of 33.9 g/100 g for northern cattle and 32.9 g/100 g for southern cattle (SE = 0.30). Furthermore, PUFA did not vary between either region, with 1.54 g/100 g and 1.53 g/100 g (SE = 0.02) for northern and southern systems, respectively. Significant interactions between feeding system and region were evident for SFA and PUFA but not MUFA which was only affected by feed type. Overall, this research demonstrates FA composition of subcutaneous fat varies for cattle produced in grass fed systems in northern and southern regions of Australia reflecting a difference in the FA profile of the pastures. While this will have an impact on the nutritional composition of some “untrimmed” cuts it is unclear as to whether such differences occur in other fat deposits including intermuscular fat and intramuscular fat which makes up a larger amount of the edible portion.<sup>(4)</sup> Given the increasing consumer demand for grass fed beef due to the increase in health beneficial FAs,<sup>(5)</sup> further research to provide more accurate nutritional data from beef cuts in varying production regions is warranted.

### References

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