

3B-112 Nutritional Composition of Australian Pork

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Aims and Objectives: The aim of the project was to conduct a targeted survey of the nutritional composition of three commonly consumed pork cuts (pork fillets, Scotch fillets and loin steaks) obtained from four different abattoirs from four Australian States (VIC, QLD, NSW, WA), to determine if there had been any changes in the key nutritional composition of Australian pork compared with previous analyses commissioned by Australian Pork Limited in 2006. The objectives were to measure proximate (moisture, ash, nitrogen, protein and total fats), iron and thiamine contents using AOAC Official Analytical Methods. Fatty acids compositions were also determined using analytically established GC-MS method. Direct comparison was made between the three cuts from the current analysis with similar cuts in the previous analysis.

Key Findings:

1. Moisture contents were (States Means) 74.2 ± 2.3 g/100g (pork fillets), 70.3 ± 1.3 g/100g (Scotch fillets) and 67.1 ± 4.1 g/100g (loin steaks). Ash contents were (States Means) were 1.177 ± 0.037 g/100g (pork fillets), 1.09 ± 0.14 g/100g (Scotch fillets) and 1.03 ± 0.11 g/100g (loin steaks). Protein contents as total nitrogen were (States Means) were 20.94 ± 0.55 g/100g (pork fillets), 18.84 ± 0.48 g/100g (Scotch fillets) and 19.7 ± 1.3 g/100g (loin steaks). Differences in protein contents of the pork cuts between the current analysis and the previous analysis (Greenfield et al, 2009) were unremarkable.
2. Fats contents were (States Means): 5.56 ± 0.50 g/100g (pork fillet), 16.60 ± 0.68 g/100g (Scotch fillets) and 17.83 ± 0.91 g/100g (loin steaks). Differences in the fats content of the pork cuts between the current analysis and the previous analysis (Sinclair et al, 2010) could not be established, due to variable fats content presented in the cuts as supplied and to differing sample preparation protocol regarding removal of fats in the laboratory before analysis.
3. Total energy as calculated from the protein and fats contents were (States Means): 560 ± 27 kJ/100g (pork fillets), 934 ± 33 kJ/100g (Scotch fillets) and 993 ± 55 kJ/100g (loin steaks). Comparison with previous analysis could not be made due to variability in fats contents that contributed to the energy calculation.
4. Iron contents were (States Means): 1.62 ± 0.32 mg/100g (pork fillets), 1.74 ± 0.15 mg/100g (Scotch fillets) and 0.83 ± 0.15 mg/100g (loin steaks). There were significant ($p < 0.05$) increases in the iron contents in the pork cuts compared to similar cuts from previous analysis (Greenfield et al, 2009). Scotch fillets showed the highest increase (217%), followed by pork fillets (188%) and loin steaks (153%).
5. Thiamine contents were (States Means): 1.217 ± 0.039 mg/100g (pork fillets), 0.820 ± 0.071 mg/100g (Scotch fillets) and 1.03 ± 0.12 mg/100g (loin steaks). Compared to the previous analysis of lean cuts (Greenfield et al, 2009), the thiamine content of pork in the current analysis was higher for loin steaks (122% increase) and Scotch fillets (126% increase). Thiamine content was lower for pork fillets (19% lower) compared to the lean pork fillets in the previous analysis. This could be due to the higher fat content, therefore less lean meat, of the pork fillet in the current analysis compared to the lean pork fillets in the previous analysis.
6. The most prominent saturated fatty acid in all three pork cuts was C16:0 (palmitic acid), followed by C18:0 (Stearic acid) and C14:0 (Myristic acid). For monounsaturated fatty acid it was C18:1 (oleic acid), followed by C18:1t9 (elaidic acid) and C16:1 (palmitoleic acid). For polyunsaturated fatty acids it was C18:2n6 (linoleic acid) followed by low amounts of C18:3n3 (α -linolenic acid).

Application to Industry:

- This project has resulted in the compilation of an up-to-date, scientifically robust database of the key nutrient composition of three commonly consumed pork cuts, pork fillets, Scotch fillets and loin steaks. These results can be used to upgrade nutrient composition databases such as NUTTAB, which will allow for communication of pork composition data.
- Comparisons with previous analyses of pork cuts (Greenfield et al, 2009) showed that iron content had increased substantially in pork fillets, Scotch fillets and loin steaks, and thiamine content had increased marginally in Scotch fillets and loin steaks since 2006. These data indicate the successes of several Australian Pork Limited and Pork CRC projects which aimed to influence the iron and thiamine contents of fresh pork.
- The iron and thiamine data can also be used for consumer education and regulatory purposes, including the use of health and nutrient content claims to be displayed on packaging and in advertisements, as a point-of-difference for pork compared to other meats.