

Evaluation of the Genetic Markers: *HFABP* and *AFABP* in the Control of Marbling Fat in Pork

W. Jon Meadus, Robin MacInnis and Wayne M. Robertson

Agriculture & Agri-Food Canada, Lacombe Research Centre, Lacombe, AB T4L 1W1
Email: meadusj@em.agr.ca

Marbling fat in fresh pork loins has a beneficial retail value of approximately \$0.30 to \$0.60 per lb based on blind taste panel surveys. The minimal acceptable marbling fat level measured as chemically extracted intramuscular fat % (IMF%), has been set at ~2% on a wet matter basis (WMB). The level of IMF% in pork loins is a highly heritable trait $h^2 = 0.52$ to 0.60 and largely independent of backfat levels $R^2=1.6\%$. Breeds recognized to have good marbling include the, Duroc, Tamworth, and Berkshire, while the common Large White, Landrace and Peitrain are known to have very low levels of marbling. A patent has recently been filed on genetic markers in the Heart and Adipoctye Fatty Acid Binding Protein (*HFABP* and *AFABP*) genes for superior marbling traits. Test breeding and a random survey of retail pork loins were performed to independently assess the value of the genetic markers to identify genotypes with superior marbling traits. The effect of the sire genotype was found to have a highly significant effect on the offspring's marbling and the random survey of retailed center cut pork loins found that ~15% of the samples had an IMF % below the acceptable 2% minimum. However the genetic markers for either the *HFABP* or *AFABP* genetic polymorphisms were not able to predict IMF %.

Implications: The level of marbling fat in some fresh pork loins has dropped below consumer taste satisfaction levels. Pig genetics have a very significant effect on marbling fat content but the current genetic markers *HFABP* and *AFABP* will not be enough to guarantee adequate marbling.