Summary

Fourier-transform mid-infrared (FTIR) milk spectra data is routinely collected within milk recording programs of different countries. This information can be used both for assessing milk composition and for genetic evaluations. Establishing an optimal strategy for the use of spectra data in genetic evaluations require knowledge of the heritability of individual bands. Therefore, in this study we used data from about 1.8 million test-day records of Canadian Holstein cows to produce a landscape of the heritability of FTIR data by band (1,060 evenly-spaced bands), parity (from first to third) and month of the lactation (from 1st to 4th). Several regions of the spectrum that have been reported to be associated to important milk components (e.g., lactose, fat and protein) showed moderate-to-high heritability estimates (0.40-0.50). We confirm many of the heritability patterns reported in previous studies and report novel findings related to differences in the heritability of FTIR spectra across parities and month of the lactation.

 Keywords: milk spectra, FTIR, spectrometry, high-throughput phenotyping, Bayesian, BGLR