Genetic variation of Heifer Mastitis in Canadian Dairy Herds

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Mastitis is the most common and expensive disease of dairy cattle. Mastitis in heifers differs from that in multiparous cows. The incidence of clinical mastitis in heifers is higher around calving than in older cows. Similarly, the distribution of mastitis causing bacteria in heifers differs from cows in later lactations. Heifer mastitis threatens the udder health in the first and consecutive lactation, increases the risk of premature culling and leads to economic losses. Compared to the use of antimicrobials, preventive management practices and treatments, genetic selection for heifer mastitis resistance could be a more efficient and sustainable way of preventing heifer mastitis. However, there has been limited investigation of genetic variation of pathogen-specific heifer mastitis. Moreover, there has been no genetic research conducted so far on heifer mastitis focusing on the period around first calving and pathogen-specific occurrence on a large Canadian dairy herd. Despite the low heritability of clinical mastitis, studies have shown that there is exploitable variation between bulls. The objective of this study is to investigate genetic variation of overall and pathogen-specific heifer mastitis in Canadian dairy herds. Data collected over a two-year period as part of National Cohort of Dairy Farms of Canadian Bovine Mastitis and Milk Quality Research Network (CBMQRN) from 91 Canadian dairy herds will be used for the study. To represent the diversity of Canadian dairy herds, these commercial dairy farms spread over six provinces; Alberta, Ontario, Quebec, and the Maritime Provinces (Prince Edward Island, Nova Scotia, and New Brunswick). Incidence of overall and pathogen-specific clinical mastitis will be treated as 0, 1 and >1 cases of clinical mastitis. A generalized linear mixed model will be used for the estimation of variance components.

Implications: Estimated genetic parameters from this research will provide insight into genetic variation of heifers associated with mastitis in Canadian dairy herds. This knowledge can be used by dairy improvement organizations and the AI industry to reduce genetic susceptibility of heifer mastitis through genetic selection.