Natalie Atherton
NMR Profiling of Beef
Supervisor: Dipesh Prema
Co-Supervisors: Kingsley Donkor and John Church

Abstract

Hay, corn, grass and grain are typically the predominant feed of choice for beef cattle in British Columbia and Alberta. Beef and dairy cattle are among the top sources of methane emissions in Canada, however, it has been shown that finishing cattle on seaweed can substantially lower the production of methane during the ruminant digestive process known as enteric fermentation. We aim to measure and compare the fatty acid content – specifically the oleic acid (omega-9) content, in beef from cattle that have been finished on grain, grass, and seaweed (brown-algae) using nuclear magnetic spectroscopy (NMR). The consumption of omega-9 is associated with many health benefits and therefore if prevalent in high quantity, could provide a new and enticing market for Canadian beef cattle farmers. Additionally, by using NMR for our analysis, we hope to reduce large solvent consumption typically associated with more frequented analysis techniques such as GC-MS.