ABSTRACT

THESIS: Using Nitrous Acid Modified MRS Medium to Selectively Isolate and Culture Lactic Acid Bacteria from Food

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Nitrous acid was used to modify traditional de Mann, Rogosa, Sharpe media to evaluate if the addition of sodium nitrite to MRS media could improve the culturing and recovery of various lactic acid bacteria species. Yogurt, cheese, and sauerkraut were inoculated with individual bacterial species followed by the recovery and enumeration of the species using the pour plate method to compare the sensitivity between nitrous acid modified MRS (mMRS) and traditional MRS. *Lactobacillus delbrueckii* and *Lactobacillus bulgaricus* were recovered at significantly higher counts from cheese in nitrous acid mMRS than MRS while there was no significant difference for other species and food systems. Growth curves were also generated for multiple lactic acid bacteria as well as nonstarters in both mMRS and MRS to measure the selectivity of nitrous acid mMRS. All lactic acid bacterial species along with *Bacillus cereus* and *Bifidobacterium longum* grew to significantly higher densities in nitrous acid mMRS than MRS while there was no significant difference in the density of *Enterococcus faecalis*. It was determined that nitrous acid mMRS is a viable alternative media for the culturing of various lactic acid bacteria.