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The Use of Gas Chromatography to Measure Carbon Dioxide Production by Dairy Starter Cultures

S. A. Mohr [1], E. A. Zottola [1], and G. A. Reineccius [1]

[1] Department of Food Science and Nutrition, University of Minnesota, St. Paul 55108

A gas chromatographic method was developed to quantify CO_2 produced by dairy starter cultures. The procedure was used to measure CO_2 production by *Lactococcus lactis* ssp. *lactis* KB, a lactic dehydrogenase-deficient mutant of *L. lactis* ssp. *lactis* C2. *Lactococcus lactis* ssp. *lactis* KB produces CO_2, diacetyl, and acetoin from lactose in milk. *Lactococcus lactis* ssp. *lactis* biovar. *diacetylactis* 18-16, which converts citrate to CO_2, diacetyl, and acetoin, and *L. lactis* ssp. *lactis* C2, which does not produce CO_2, were also used. Samples were introduced to the column through an injection loop. Thermal conductivity was used for CO_2 detection. This method was relatively simple, results were reproducible, and CO_2 production by other fermentative bacteria could be measured.

Key Words: carbon dioxide • gas chromatography • dairy starter cultures

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