Determination of Bacterial Cell Number to Differentiate *Campylobacter jejuni* from *C. coli* by the Simple Hippurate Hydrolysis Test

Miyuki Fujioka* and Yoshimitsu Otomo

Hirosaki University Graduate School of Health Sciences, Hon-cho 66-1, Hirosaki, Aomori, 036-8564, Japan

*Corresponding author's e-mail: mfujioka@cc.hirosaki-u.ac.jp

Abstract: *Campylobacter* is widely known as one of the most common food borne pathogens which causes acute bacterial diarrhea in humans worldwide and *C. jejuni* and *C. coli* are the predominant bacteria that causes Campylobacteriosis. *C. jejuni* usually hydrolyzes hippuric acid to benzoic acid and glycine and this simple hippurate hydrolysis test is used to rapidly distinguish *C. jejuni* from *C. coli* in many clinical microbiological laboratories. However, sometimes the test gives variable results, which might be due to the inadequate number of bacterial cells taken in the test sample. In this study, the authors investigated the optimum number of bacterial cells required to perform the test smoothly. A total of 40 *C. jejuni* and 10 *C. coli* strains were included in this study and test bacterial cell suspensions were prepared matching the McFarland unit 0.5, 1, 2, 3, 4, and 5. Ninhydrin was added to the cell suspension and the color change was measured at an optical density of 540 nm. Results showed that the test bacterial suspensions of *C. jejuni* matching McFarland unit 1, 2, 3, 4 and 5, were all positive. On the other hand, bacterial cell suspension of *C. coli* matching more than 5 gave false positive results. Reproducible results were obtained with a bacterial suspension which matched with the McFarland unit 1 and this number of bacteria may be used for the hippurate hydrolysis test to identify *C. jejuni* from *C. coli*.

Key words: Identification, *Campylobacter jejuni*, hippurate hydrolysis test, *Campylobacter coli*.