Prevalence of *Campylobacter jejuni* in broilers and the adhesion and invasion abilities

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Abstract

*Campylobacter jejuni* is the major cause of food borne pathogen in human which the major reservoir of this pathogen is poultry. The *C. jejuni* in broilers had been investigated from the ceca of broilers received from the slaughter house. Twenty broilers/flocks of 7 flocks had been performed. The prevalence of *C. jejuni* in each flock was following 80%, 70%, 55%, 75%, 55%, 65% and 55%. The average prevalence of *C. jejuni* was 65% from the broiler flocks. Adhesion and invasion of 44 strains of *C. jejuni* on INT 407 had been studied. The adhesion and invasion abilities of 44 *Campylobacter* isolates from caecal contents were analyzed with Human embryonic intestine (INT-407) cells using a gentamicin resistance assay. The 44 *Campylobacter* isolates adhered and invade to INT-407 cells at 0.022 to 0.0896% and 0.000035 to 0.00142% of the starting viable inoculum. No correlation between adhesion and invasion abilities of *C. jejuni* to INT-407 had been found. Our findings indicated that *C. jejuni* present in the ceca of broilers were diverse in their abilities to adhere and invade human intestinal epithelial cells among the *Campylobacter* isolates.

**Keywords** *Campylobacter jejuni*, Broilers, prevalence, adhesion, invasion

Introduction

*Campylobacter* is one of the most leading causes of acute bacterial diarrhea worldwide (Mead et al., 1999). Infection with *C. jejuni* or *C. coli* is characterized by the sudden onset of fever, abdominal cramps and diarrhea with blood and leukocytes (Blaser et al, 1979; Blaser et al., 1983). There are many possible sources of infection with *C. jejuni* and *C. coli*, as they are part of the normal intestinal flora in a wide range of birds and mammals. Large-scale outbreaks of human campylobacteriosis are rare and are usually linked to the consumption of polluted water or raw milk. Sporadic cases of campylobacteriosis are more common and are associated with the consumption of undercooked chicken. In the United States, case-control studies have attributed 48-70% of the sporadic infections to the consumption of Campylobacter-contaminated chickens (Deming et al., 1987; Harris et al., 1986). The percentage of Campylobacter-contaminated chicken carcasses varies, often between 50 and 90%, depending on the time of year and the number of carcasses tested. One study found that as many as 98% of chicken carcasses may be contaminated with *C. jejuni* by the time of sale (Stern and Pretanik, 2006). The ability of *C. jejuni* to adhere and invasive the epithelial cells of the gastrointestinal tract is important for the development of Campylobacter-mediated enteritis (Pei et al., 1998; Russell et al., 1994). The adherence to and invasion of *C. jejuni* into host cells has been studies in a variety of cell lines (de Melo, et al., 1989; Hu and Kopecko, 1999; Konkel et al., 1992; Oelschlaeger et al., 1993). Human embryonic intestine (INT-407) had been widely used to assess the ability of enteric bacteria to adhere and invade epithelium. The objective of this study was to study the prevalence of *C. jejuni* in broiler intestine and the abilities of their adherence and invasion.