Campylobacter fetus Subspecies jejuni (Vibrio fetus) from Commercially Processed Poultry

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Three isolates of the human and animal pathogen Campylobacter fetus ss. jejuni (Vibrio fetus) were obtained from 165 poultry meat samples purchased from local retail stores.

Campylobacter fetus (Vibrio fetus) is a causative agent of bovine and ovine abortion, avian hepatitis, scours in pigs and calves, as well as a cause of human infection. It has been isolated from the intestinal contents and organs of several meat animals, including cattle and sheep (1, 8), pigs (6), chickens, and turkeys (10). Dekeyser et al. (2) recovered the organism from mixed microflora (stools) in humans with diarrhea symptoms. Many investigators feel that the incidence of these infections in man is highly underrated.

The mode of transmission of human C. fetus infection is obscure, particularly when the disease is found in individuals living in an urban environment without a history of animal contacts. Campylobacter fetus gastroenteritis in man has been traced to the milk supply (4), consumption of raw beef serum (3), and raw beef liver (11). The present study shows further evidence to indicate a possible food-borne epidemiology for human infection with C. fetus.

Campylobacter fetus ss. jejuni was isolated from chicken meat obtained from retail stores (Table 1). This organism has not previously been reported from commercially processed chicken parts. The method of isolation and the selective media containing antibiotics were similar to those used by Shepler et al. (7) for the isolation of C. fetus from bull preputial fluid, and those used by Plastridge et al. (5) for the isolation from bull semen and Smibert (8, 10) for the isolation from animal feces. The chicken parts were surface rinsed with nutrient broth (BBL, Cockeysville, Md.) by shaking in polyethylene bags. The broth was then filtered (0.65 μm) and spread on the surface of a selective medium of Brucella agar (Pfizer, Inc., N.Y.) containing 2 units of bacitracin/ml, 2 μg of novobiocin/ml, and 1 unit of polymyxin/ml. These plates were incubated at 37 C for 3 to 5 days in a microaerophilic atmosphere (5% O₂, 10% CO₂, 85% N₂). Suspect colonies were picked on the basis of being unpigmented and having a relatively small diameter (less than 2 mm). These were screened for nonfermentation of glucose, oxidase and catalase production, and morphological appearance under phase microscopy. Preparation of these media is described by Smibert (9). Further biochemical tests were employed to confirm the identity of these isolates (see Campylobacter in Bergey's Manual of Determinative Bacteriology, 8th ed., in press).

Contaminants were a significant problem in the isolation and recovery of C. fetus from mixed poultry microflora. Alcaligenes faecalis was particularly annoying. This organism can be easily mistaken for C. fetus after the initial screening procedures since it has similar biochemical characteristics and morphological appearance. The difficulties encountered in the isolation of C. fetus and the selective method of recovery suggest that the incidence of this bacterium as found on retail poultry meat is a minimum value.

The isolates were biochemically and morphologically indistinguishable from 12 other C.
fetus ss. jejuni strains previously isolated from human and avian disease. C. fetus organisms were shown to be capable of surviving on the surface of chicken meat at refrigeration (3 C) and freezing (−23.5 C) temperatures for periods long enough to allow the meat to be marketed at the retail level (5 days at 3 C and 20 days at −23.5 C). Since the microorganism has been isolated from other meat animals (1, 6, 8), similar microbiological analyses of meat products such as pork, beef, lamb, or turkey may reveal C. fetus contamination.

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