Isolation of Campylobacter Species from Meat

[1]A. ARWANA and [2]Dr. PROMBERGER
[1]Al Baath Uni. Fac. of Vet.-med Hama, Syria; [2]Staatl. Tierärztl. Untersuchungsamt, Germany

SUMMARY
The occurrence of C. species in meat was investigated by using appropriate media for the isolation and growth. Incubation was carried out at 42°C in the presence of 10 per cent CO_2. In total 137 samples of meat and 61 samples of meat products were investigated, however, C. species were not detected.

INTRODUCTION
The bacterium Campylobacter spp. jejuni has only recently achieved recognition as an important pathogen of gastroenteritis in humans. C. jejuni is recovered from human diarrheal specimens at a rate that depends on both the awareness of the investigators and the methods employed. This is borne out by following the increase in number of cases of Campylobacter enteritis reported to the communicable Disease surveillance Centre in Great Britain (Anonymous 1981) (Fig 1). Observations confirming C. jejuni as an important agent of gastroenteritis have been well-documented. As the true incidence of Campylobacter infection of humans in becoming understood, the general assessment is that the pathongen is at least as prevalent as Salmonella in patiens with gastroenteritis.
The increased awareness of the presence of C. jejuni in patients with gastroenteritis has led to attempts to recover the pathogen from incriminated foods. The organism so far has been associated with pork, ground beef, chicken and mild. Unpasteurized milk is the most frequently implicated vehicle of Campylobacter infection.

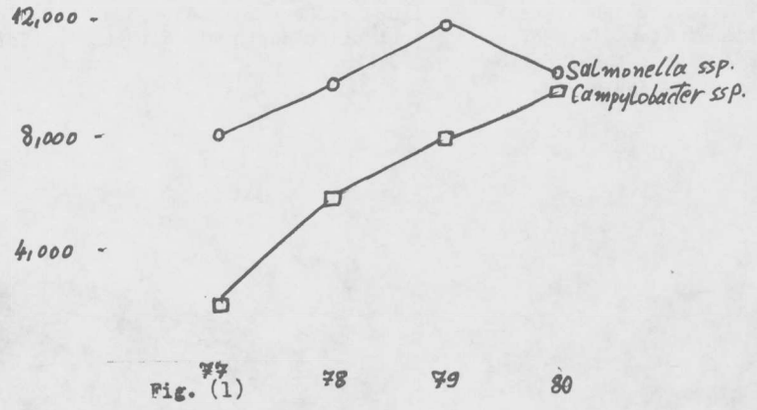

Fig. (1)

This list is not exhaustive and, indeed Butzler and Skirrow (1980) mention that consumption of milk was implicated in five major Campylobacter outbreaks in Great Britain during a 6-month period.
In a report from the Netherlands Breuver, R. et al. an explosive outbreak of of Campylobacter enteritis occurred among soldiers on a survival exercise. Of 123 cadets given live chickens to prepare for their evening meals, 89 became ill with symptoms of enteritis within the following week. Fecal samples from 104 of the cadets yielded no Salmonella or Shigella, but 34 samples yielded Campylobacter. The authors speculated that improper heating of the chickens left viable pathogens in the food. Raw hamburger has also been implicated as a source of Campylobacter enteritis in a military camp. Other reports further implicate C. jejuni as the causative agent in foodborne enteritis, and only very small

numbers (500 cells) are needed to effect a gastroenteritic response in humans, Arwana, A. (1987).
The most common symptoms were watery muceus and hemorrhagic diarrhea, fever, vomiting and abdominal pain (R. Hollander, 1981).

MATERIALS and METHODS

Selective plates and broth:

Several enrichment methods are Butslar and skirrow, selective Agar and enrichement broth (Thioglycolate + Preston Supp.)

Types of foods (samples):

137 samples of cattle meat (liver, kidney, spleen and muscles) were taken from (Staatl. Tierärztl. Untersuchungamt-Aulendorf) from slaughterhouses. 61 samples meat products from butcheries.

Isolation Methods:

The methods used depended on exchanging the atmosphere of the containers used to cultivate the organism with 5 per cent O_2, 10 per cent CO_2 at 42°C for 48 hours. For both meat and meat products samples. Meat products samples were left for 24 hours in enchrichment broth and then moved to selective plates to be recultivated in them (Fig. 2).

Note: Reference of C. SSP. from 1. STUA (C. jejuni, C. coli); 2 Freiburg Institut (C. laridis).

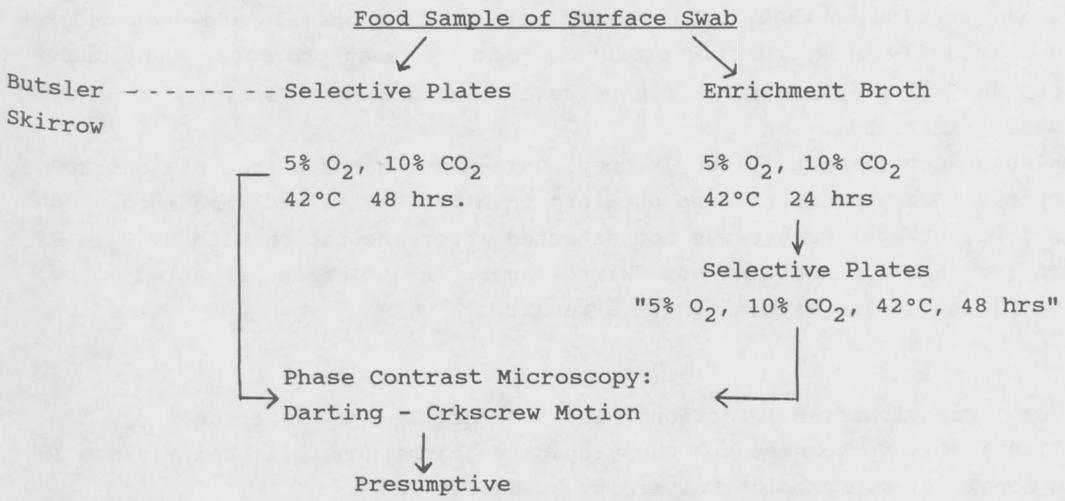

Fig. (2) Methods for isolating Campylobacter species from foods

RESULTS and DISCUSSION

In total 137 samples of cattle meat (liver, kidney, spleen and muscles) taken from slaughtered cattle, and 61 samples of meat products were obtained from butcheries and immediately sent to labs. (STUA) and wer investigated for Campylobacter species with a negative result.

The colonies suspected for C. spp. were examined in the hanging drop and differentiated by examination of their growth at 43°C and 25°C, Oxidase and Catalase activity, the freen staining, the nitrate reduction, the production of hydrogen sulphide in a sensitive medium (Cysteine-containing thioglycellate broth) and a non-sensitive medium (Lysindecarboxylase sulfhydrase Test Medium acc. to Costin, triple-sugar-iron-Agar), the tolerance of sodium chloride (3.5%), glycine (1%), TTC (2,3,5-triphenyl tetrazolium chloride 400 ug/ml), selente (0.1%), nalidixic acid (30 ug) and cephalothin 30 ug and the hippocrate hydrolysis. (Bornemanmn-Rohrig (1985); Stern, N. (1982), Stern, N. et al. (1985), N.J. Stern et al. (1984) Minimal Cooking for 20 min. at 90°C eliminated all C. spp.
The authors in total 35 samples of cattle meat and 45 minced meat from slaughtered animals were investigated, however, Campylobacter species was not detected, the same as found in my results.
Samples of ground beef, beef flank steak, lamb stew meat, broiler chicken, pork sausage (without antimicrobials), and pork chops were selected to assess the presence of C. spp., N.J. Stern et al (1985).
Arwana, A. (1987) isolated C. jejuni in poultry (4.0 %) more than in mutton (2.7 %). Compared with Bornemann-Rohrig's results was 3 % of the animals, only the rinsing samples were C. coli positive. The animals and poultry are source for Campylobacter. Therefore the animal meat may be the cause of infection in humans.

SUMMARY
The literature continues to report the incidence of Campylobacter species. Chicken may, in the long run, prove to be the most common source of human diarrhoeal diseases. The study of literature allows the conclusion that certain foods derived from animals and destined for human consumption especially milk and milk products; meat and meat products, and sausages foods, egg products and all prepared meals can be contaminated with C. spp. and can become the cause for diseases in humans.
In total 137 samples of cattle meat (liver, kidney, spleen and muscles from slaughtered cattle and 61 samples of meat-products were obtained from butcheries and immediately sent to be examined in lab., however C. ssp was not detected after incubation with 5% O_2, 10% CO_2, 5% N_2 at 42°C for 48 hrs on Butsler and Skirrow Agar. The colonies suspected to be C. spp. were examined biochemically with a negative result.

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