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**OCCURRENCE OF CAMPYLOBACTER JEJUNI IN
RAW MILK IN ASSIUT CITY**
(With One Table)

By

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مدى إنتشار ميكروب الكامبيلوباكتريـ جيوجناى فى
ألبان مدينة أسيوط

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تزايدت فى الآونة الأخيرة حالات الإصابة بالإسهال فى الإنسان الناتجة عن تلوث الأغذية بميكروب الكامبيلوباكتريـ جيوجناى . وكان للألبان دوراً كبيراً فى أحداث معظم حالات التسمم بهذا الميكروب لذا أجريت هذه الدراسة لمعرفة مدى تواجد ميكروب الكامبيلوباكتريـ جيوجناى فى اللبن الخام المتداول فى مدينة أسيوط . وبفحص عدد ٩٢ عينة من اللبن الخام جمعت عشوائياً من مزرعتين للألبان بمدينة أسيوط تبين أن ٧.٨٧% حاملة لهذا الميكروب . كذلك نوقشت خطورته على الصحة العامة والشروط الواجب توافرها لمنع تلوث الألبان بهذا الميكروب .

SUMMARY

Raw milk samples obtained from two dairy farms of those supplying Assiut City were analyzed for *Campylobacter jejuni*. The organism was found in 8 of 92 samples. The results indicate the prevalence of the organism in Assiut. The public health implications of these findings are discussed.

INTRODUCTION

Campylobacter enteritis is now a well recognized disease, yet in most sporadic infections the source and mode of transmission is unclear, even though food is thought to be a common vehicle.

Foods of animal origin seem to be the most important vehicle of human infection. Chicken products are often involved in outbreaks of campylobacteriosis (HARTOG *et al.*, 1983). Only a few outbreaks were related to contaminated red meats (PARK *et al.*, 1982). On the other hand many outbreaks, with often high attack rates up to 100% (BLASER *et al.*, 1979b) have been associated with consumption of raw, certified or improperly pasteurized milk (TAYLOR *et al.*, 1979; TERHUNE *et al.*, 1981; McNAUGHTON *et al.*, 1982; BLASER *et al.*, 1983 and STALDER *et al.*, 1983).

The route by which *Campylobacter jejuni* enters milk has been much debated and two hypotheses have been presented: milk may be contaminated by means of a naturally occurring campylobacter mastitis, or it may be contaminated with bovine faeces during or after milking. Both are theoretically possible because *C.jejuni* is commonly present in cattle faeces (ROBINSON and JONES, 1981) and a campylobacter

M.K. MOUSTAFA

mastitis has been produced experimentally by LANDER and GILL (1980).

DOYLE and ROMAN (1982a) have isolated *C.jejuni* from 1 out of 108 (0.9%) farm bulk milk tank samples from nine farms. Also, the work of LOVETT *et al.* (1983) recovered *C.jejuni* from 3 of 210 (1.4%) bulk milk samples. These low isolation rates were confirmed by results of BOER *et al.* (1984) who found the organism in 2 out of 1200 milk samples from bulk tanks.

Since the contamination of raw milk in our country is particularly common and because there is a public demand for raw milk, the purpose of this study was to estimate the prevalence of *C.jejuni* in the raw milk supply of Assiut City.

MATERIALS and METHODS

Samples :

A total of 92 raw milk samples from two dairy farms in Assiut City (University farm and El-Awamer farm), were screened for the presence of *C.jejuni*. Samples were taken from the bulk cans at each farm and were held at refrigeration temperature until analyzed.

Cultivation :

The enrichment procedure described by BOYLE and ROMAN (1982 b) as used. After 48 h., subcultures were made on campy BAP agar ates (BLASER *et al.*, 1979a). Plates were incubated for 48 h. at 2°C under microaerobic condition.

Identification :

Smears of suspect colonies were examined by phase-contrast microscopy for typical morphology and motility. Suspect colonies were confirmed to be *C.jejuni* by biochemical and growth characteristics, using the procedures of SKIRROW and BENJAMIN (1980 a,b).

RESULTS

The results of the examined samples are summarized in Table 1.

Table (1): Rate of isolation of *C.jejuni* in examined milk samples.

Source of samples	No. of samples examined	No. of <i>C.jejuni</i> positive samples	%
University farm	42	2	4.7
El-Awamer farm	50	6	12.0
Total	92	8	8.7

COMPYLOBACTER IN MILK

DISCUSSION

C.jejuni was found in each of the two investigated dairy farms. 2 out of 42 (4.7%) milk samples collected from the University herd were found to contain the organism (Table 1). The examination of milk from El-Awamer dairy herd recovered *C.jejuni* from 6 of 50 (12%) samples. The present isolation rates of *C.jejuni* are high as compared with the observations of other authors (DOYLE and ROMAN, 1982a, LOVETT et al., 1983 and BOER et al., 1984). In most studies the low isolation rates probably reflect low levels of contamination through dilution effected by bulking milk. These effects are less pronounced in this study, with the result that higher number of isolates were obtained. However, HUTCHINSON et al. (1985) have isolated the organisms from two of five pooled milk samples from 26 retail bottles.

As campylobacters have been found in healthy cows at counts of about 10^5 /g of faeces (SALLY WATERMAN et al., 1984), it follows that only a few grams of faeces are needed to contaminate a bulk milk to produce a potentially infective dose in a glass of milk. ROBINSON (1981) and BLACK et al. (1983) have shown the human infective dose of *C.jejuni* to be very low. their studies indicated that as few as 2 to 3 cells per ml of milk can infect an individual who consumes 240 ml of contaminated milk.

In Egypt, the fluid milk is usually sold as raw milk. In addition, some cheeses are often manufactured from raw milk and could be consumed fresh. EHLERS et al. (1982) has reported that several strains of *C.jejuni* inoculated into Cheddar cheese milk survived in the curd for 30-60 days of curing. However, the heat resistance studies (CHRISTOPHER et al., 1982) indicated that survival of this organism during commercial pasteurization of milk would be unlikely, and there are no cases of campylobacter jejuni enteritis have been reported from the consumption of pasteurized milk.

In consequence of these results, the public should be made aware of the hazard of Campylobacter and other pathogens in raw milk and should be advised to heat raw milk before consumption. Moreover, the dilemma that may face those responsible for public health will be resolved only by making the sale of raw milk illegal.

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M.K. MOUSTAFA

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