

SURVIVAL OF *CAMPYLOBACTER JEJUNI* AND *CAMPYLOBACTER COLI* IN CHICKEN LIVER AT FROZEN STORAGE TEMPERATURES

Snezana Ivić-Kolevska^{1*}, Biljana Miljković-Selimović², Branislava Kocić², Goran Kolevski³

¹Institute of Public Health of the Republic of Macedonia, 50 Divizija 6, 1000 Skopje, Macedonia

²Referent Laboratory for Campylobacter and Helicobacter, Institute for Public Health, Dr Zoran Djindjic 50, 18000 Niš, Serbia

³Clinic of Neurology, Bul. Vodnanska nn, 1000 Skopje, Macedonia

*e-mail: snezanaivickolevska@hotmail.com

Abstract

The aim of this study was to determine the survival of *Campylobacter jejuni* and *Campylobacter coli* in chicken liver samples at low and frozen temperatures after different times of incubation, to assess the effect of the type of plate, to determine the difference in survival of *C. jejuni* and *C. coli* at different temperatures and to determine the impact of aerobic bacteria on the survival of *C. jejuni* and *C. coli*.

Chicken liver samples were inoculated with *C. jejuni* NCTC 11351 suspensions and stored in bags at temperatures of -20 °C and -70 °C, same time, other samples of chicken liver were inoculated with *C. coli* ATCC 33559 suspensions and stored in the same conditions. After the incubation period, every sample was left to defrost spontaneously. 0.1% of peptone water was added to the sample to obtain dilution of 1:10 and pummeled for 2 min. at 400 rpm/min. Then, from the homogenized mixture, serial dilutions (1 : 10 to 1 : 10⁷) were made with 0.1% of peptone water. 0.1 mL of every dilution was cultivated in duplicate, on two selective (Modified charcoal cefoperazone deoxycholate agar and *Campylobacter* agar with 5% sheepblood) and two non-selective media (Tryptic soy blood agar with 5% sheepblood and Columbia blood agar with 5% sheepblood) for *C. jejuni* and *C. coli* isolation. Plates were incubated at 42 °C for 48 h in microaerobic atmosphere with 9 - 10% of CO₂. For detection of aerobic mesophilic bacteria, 0.1mL of every sample were cultivated on plate (Plate Count Agar) in serial dilutions 1:10 to 1: 10⁷ and incubated at 30 °C for 72 hours.

The mean value of *C. jejuni* from liver samples decreased from 7.38 log₁₀ CFU/g after 30 minutes of incubation at ambient temperature, while at freezing temperatures the value in the 10-th week decreased to 3.41 log₁₀ CFU/g at -20 °C and 3.97 log₁₀ CFU/g at -70 °C. The mean value of *C. coli* from liver samples decreased from 6.29 log₁₀ CFU/g after 30 minutes of incubation at ambient temperature, while at freezing temperatures the value in the 10-th week decreased to 4,38 log₁₀ CFU/g at -20 °C and 4.40 log₁₀ CFU/g at -70 °C.

The presence of aerobic mesophilic bacteria did not influence the survival of *C. jejuni* and *C. coli* in chicken liver samples. Keeping poultry liver at freezing temperatures is important for reducing the number of *C. jejuni* and *C. coli* which has a strong influence on the prevention of campylobacteriosis occurrence in humans.

Key words: *Campylobacter jejuni*, *Campylobacter coli*, *Campylobacteriosis*, *Chicken liver*.