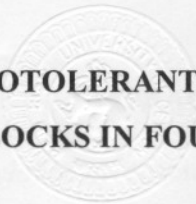


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**OCCURRENCE OF THERMOTOLERANT CAMPYLOBACTER IN BROILER MEAT AND BROILER FLOCKS IN FOUR PROVINCES OF SRI LANKA**

By

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## ABSTRACT

Thermotolerant group of *Campylobacter* species is a common source causing human bacterial gastroenteritis in the world today. Poultry carcasses and live poultry are considered to be the major transmitter for zoonotic *Campylobacter*. Poultry is a developing industry in the country and some of the poultry processors are engaged in export industry utilizing benefits of world trade agreements. However very few data is available in Sri Lanka to show the importance of *Campylobacter* as a foodborne pathogen. Therefore the objective of this study was to investigate the occurrence of *Campylobacter* from broiler meat produced in the country.

Initially the isolation technique of *Campylobacter* was established in the laboratory based on ISO 10272:1995(E) with certain modifications. Broiler meat samples, caeca and cloacal swabs were the sample types tested to isolate *Campylobacter*. Meat samples were enriched in the Preston enrichment broth at the temperature of 42<sup>0</sup>C for 48 hours in a microaerophilic condition. A loopful from the enrichment broth was inoculated on a mCCDA plate and incubated at 42<sup>0</sup>C for 48 hours in a microaerophilic condition. The typical colonies of *Campylobacter* were selected and biochemical tests were done to confirm the genus *Campylobacter*. Caecal contents or cloacal swabs were cultured on mCCDA plates with no enrichment. Isolation and identification procedure of *Campylobacter* was done using the same procedure practiced for meat.

Meat samples were tested from automated processing plants, manual processing plants and retail shops. Totally 128 meat samples were tested for both *Campylobacter* and *Salmonella* and 35.15% of the meat contained *Campylobacter* while *Salmonella* was isolated from only 11.71% of the meat tested. Of the 102 meat samples tested for

*Campylobacter* from automated processing plants 28 (27.45%) were positive for *Campylobacter*. The percentages of *Campylobacter* reported from manually processed meat and meat from retail shops were high being 48% and 59% respectively.

When the tested meat samples became positive for *Campylobacter* farms of origin the tested meat were traced-back and therefore broiler flocks were tested in order to find out the relationship. During the farm investigation caeca were collected to detect the flock prevalence at the points of slaughter. Out of the 127 broiler flocks tested in the study 86 (67.71%) flocks were colonized with *Campylobacter*.

As the flocks were positive question aroused as to whether the flocks were colonized with *Campylobacter* throughout the life or they got colonized at a certain age of the life. Therefore cloacal swabs were collected from broiler flocks from day one of age on every other day until the flock showed colonization with *Campylobacter*. Of the 20 broiler flocks studied, all the flocks got colonized with *Campylobacter* around 2-3 weeks of their age. Nine boiler flocks were studied throughout their life span until slaughter and results indicate that caeca from all the flocks and meat produced from the same flocks were positive for *Campylobacter*.

Initially the *Campylobacter* isolates collected from the study were tested upto genus level only however some of the *Campylobacter* isolates were tested upto species level. Further this study revealed the presence of considerably high levels of *Campylobacter* associated broiler flocks thereby in broiler meat. Alarming high levels of antimicrobial resistance of *Campylobacter* is an additional finding to formulate regulations on the usage of

antimicrobial agents in broiler farming. The results generated in this study could be used to formulate control measures to reduce *Campylobacter* in the food chain in Sri Lanka.

**ISO** – International Organization for Standardization

**mCCDA** – modified Charcoal Cefoperazone Deoxycholate Agar

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