

Yeshimebet Chanyalew Getahun 2013: Distribution of *Campylobacter* Species in Sheep of Different Production Area at Debre Birhan, North-Shoa, Ethiopia. Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Faculty of Agriculture. Thesis Advisor: Miss Wiriya Loongyai Ph.D. 107 pages.

The prevalence of thermophilic *Campylobacter* spp. in fecal and carcass swab samples was studied at Debre Birhan, North-Shoa, Ethiopia in a 9 month period from August 2011 to April 2012. Out of 310 fecal samples 33 (10.6%) thermophilic *Campylobacter* spp. were isolated and differentiated to *C. jejuni* and *C. coli* which accounted for 87.9% and 12.1%, respectively. In addition, 15 (21.4%) *Campylobacter* species were isolated from the carcass samples swabbed and investigated (n=70) and accounted for *C. jejuni* and *C. coli*, with 93.3% and 6.7%, respectively. The prevalence of *Campylobacter* was high (78.8%) during the period from August to December in different farms while low prevalence (21.2%) was observed during the period from January to April. The isolation rate of *Campylobacter* was greater in Awassi exotic and cross breeds (60.6%) than in the indigenous breeds (39.4%).

An antimicrobial susceptibility test was carried out for 48 isolated *Campylobacter* species using the agar disc diffusion method. The results showed that resistance was found to cephalothin (100%), ampicillin (33.3%), tetracycline (22.9%), erythromycin (12.5%), streptomycin (4.2%), gentamicin (4.2%), chloramphenicol (4.2%), nalidixic acid (2.1%) and ciprofloxacin (2.1%) whereas no resistance was found to penicillin.

The 43 *C. jejuni* isolates from fecal and carcass samples by a conventional microbiological technique were confirmed as positive results using Polymerase Chain Reaction (PCR) technique. The results showed that 100% of samples were also detected by PCR. The nucleotide sequences of *C. jejuni* gene at position 1-402 (362 bp) in this study showed 100% homology to *C. jejuni* subsp. M1 (CP 001900) and *C. jejuni* subsp. 81116 (CP000814) whereas showed 97% homology to U27272. *C. jejuni* lost their viability when frozen or refrigerated at -20 °C and 4 °C. Freezing may warrant consideration as a public health benefit relating to food of animal origin especially meat, to reduce the *Campylobacter* exposure level. The antimicrobial property of three types of wine against *C. jejuni* was investigated. White wine and two red wines, all with 11.5% ethanol significantly reduced the viability of *C. jejuni*. The minimum microbicidal concentration of white wine was 10% and for the two red wines was 25%.

Student's signature

Thesis Advisor's signature