



# 2021 INTERNATIONAL POULTRY SCIENTIFIC FORUM

ABSTRACTS

January 25-26, 2021

**P62 Isolation of Salmonella from eggs and environment of Backyard Poultry in Western Chitwan, Nepal.** Shiva Bhusal<sup>GS</sup>, Nabin Neupane, Rebanta Kumar Bhattarai *Agriculture and Forestry University*

A study was conducted examining the eggs and environment of backyard poultry, including chickens and ducks, to detect *Salmonella* bacteria and potential antimicrobial resistance patterns from June – August 2018 in Chitwan, Nepal. A total of 275 samples were taken from 55 households (44 chickens and 11 ducks). All samples were processed in the Microbiology Laboratory of the Agriculture and Forestry University in Chitwan, Nepal for bacterial isolation and identification. Antimicrobial susceptibility testing (AST) was also performed using the disc diffusion technique. The overall prevalence of *Salmonella* in backyard poultry was 21.81% in chickens and 41.81% in ducks. The *Salmonella* prevalences differed by source of the chicken sample: cloacal swab (20.45%), feed (29.54%), housing surface (40.90%), egg exterior (9.09%), and egg interior (9.09%). Similarly, duck sample also exhibited varying prevalences of *Salmonella*: cloacal swab (81.18%), feed (18.18%), housing surface (63.63%), egg exterior (27.27%), and egg interior (41.81%). Among six antibiotics tested for in the study, sensitivity order was Ciprofloxacin (87.87%), Gentamycin (78.78%), Cotrimoxazole (72.72%), Chloramphenicol (65.15%), Ampicillin/sulbactam (56.06%), and Tetracycline (13.63%). The antibiotics with higher intermediate sensitivities were with Gentamycin (12.12%) and Ampicillin/Sulbactam (12.12%) and those with least was with Cotrimoxazole (1.51%) and Tetracycline (1.51%). In our study area, farmers rearing backyard poultry for meat and eggs may be at risk for *Salmonella* through different exposure mechanisms such as handling eggs, feed and animals. It is critical to maintain hygienic practices from rearing to consumption of poultry. Resistance patterns are also emerging in backyard poultry, which demands the judicious use of antibiotics while rearing chickens and ducks.

**Key Words:** *Salmonella*, backyard poultry, ducks, eggs, antimicrobial resistance

**P63 Comparison of techniques to enumerate Salmonella bacteriophages in cecal content of chickens** Daiane Voss-Rech, Francisco da Fonseca, Marcos Morés, Arlei Coldebella, Clarissa Vaz<sup>\*</sup> *Embrapa Suínos e Aves*

Bacteriophages have been investigated as a biological alternative to control non-typhoidal *Salmonella* in poultry farms since they specifically infect target bacteria while leaving the normal microbiota unaffected. The most common method for enumerating lytic bacteriophages is the plaque assay using an overlay culture of a suitable target bacterium. This study compared the plating in the soft agar overlay and the spot test to enumerate bacteriophages with lytic activity against *Salmonella* in the cecal content of chickens subjected to phage therapy. SPF chickens received a cocktail with 3 wild-type lytic bacteriophages ( $10^9$  PFU/mL) from 35 to 39 days of age by drinking water. Bacteriophages were counted in cecal content aseptically removed from euthanized chickens at 24, 72 and 120 h after phages administration. In total, 13-18 chickens were evaluated in each given necropsy. Bacteriophages were concurrently enumerated by soft agar overlay and the spot test. Samples were individually homogenized in 10 volumes of SM buffer, treated with 2% chloroform and centrifuged at  $10,000 \times g$  for 3 min. The supernatant was subjected to serial dilutions in SM buffer. From each dilution, 0.1 mL was homogenized with 200  $\mu$ L of a log phase culture of *Salmonella* Enteritidis, adsorbed at 37 °C / 15 min, transferred to 6 mL of nutrient broth containing 0.65% agarose and 10 mM  $MgSO_4$  and distributed as an overlay onto nutrient agar plates. Aliquots (20  $\mu$ L) of each dilution were simultaneously placed in a spot on a previously prepared *S. Enteritidis* overlay culture, as described. Plates were incubated at 37 °C / 18-24 h when PFUs were counted. The association between soft agar overlay and the spot test was evaluated using linear regression analysis. Next, a t test for paired data was used to evaluate difference between both methods. Linear regression analysis showed a significant association ( $p \leq 0.05$ ) between the evaluated methods ( $R^2 = 0.882$ ). However, the spot test estimated higher phage numbers when compared to the soft agar

overlay at an average of 0.39 log. In conclusion, spot test was useful for determining the bacteriophages number, estimating approximate phage titers and following the course of complex experiments without using large numbers of plates.

**Key Words:** Bacteriophage, *Salmonella*, phage titer, spot test

**P64 Antimicrobial resistance in Campylobacter jejuni strains isolated from broiler farms in Brazil** Daiane Voss-Rech, Letícia Lopes, Virginia Silva, Clarissa Vaz<sup>\*</sup> *Embrapa Suínos e Aves*

*Campylobacter jejuni* is a foodborne pathogen closely related to broilers. Antimicrobial susceptibility monitoring offers an overview on the strains resistance patterns with potential to spread from the food chain to humans. Here we report the *Campylobacter* strains isolated from field samples received at the laboratory over a twelve-month period from four broiler-producing companies in southern Brazil and provided data on the antimicrobial susceptibility of strains. Samples (feces, cloacal swabs, drag swabs, litter, feed, drinking water, darkling beetles, and swabs and paper lines from broiler chicks transport crates) were analyzed by the conventional culturing method. Antimicrobial susceptibility testing was performed by microdilution procedure to determine the minimum inhibitory concentrations for ciprofloxacin, enrofloxacin, erythromycin, spectinomycin, and tetracycline. Antimicrobial resistance levels were individually compared using the chi-square test. Differences were evaluated using the variance analysis, which were compared by the Tukey test (5% significance level). Among 807 samples tested, 515 (63.8%) tested *Campylobacter*-positive. *Campylobacter jejuni* and *C. coli* were detected; the first one being more frequently isolated (98.2%). Next, 80 *C. jejuni* strains from 20 farms were systematically chosen to represent each broiler company and were analyzed for antimicrobial susceptibility. A total of 8/80 (10.0%) of analyzed *C. jejuni* strains were sensitive to all tested antimicrobials. Intermediate resistance was identified against enrofloxacin (5.0%) and ciprofloxacin (2.5%). Resistant and sensitive strains were individually compared, revealing the highest resistance rates against enrofloxacin (89.5%) and ciprofloxacin (83.3%) ( $p < 0.0001$ ), whereas the lowest resistance was found to erythromycin (15.0%,  $p < 0.0001$ ). Strains showed moderate resistance to spectinomycin (57.5%,  $p = 0.1797$ ) and tetracycline (52.5%,  $p = 0.6547$ ), however, with no significant difference between each other. The high level of resistance to enrofloxacin and ciprofloxacin highlight the need for further studies to investigate selective pressure for the development of fluoroquinolone resistance in *C. jejuni* strains on farms.

**Key Words:** *Campylobacter*, antimicrobial resistance, broiler, food safety

**P65 Thymoma in a California backyard chicken** Julia Blakey<sup>\*1</sup>, Carmen Jerry<sup>2</sup>, Ana Da Silva<sup>2</sup>, Simone Stoute<sup>2</sup> <sup>1</sup>*United States Department of Agriculture, Agricultural Research Service, Southeast Poultry Research Laboratory*, <sup>2</sup>*California Animal Health & Food Safety Laboratory System, University of California, Davis, Turlock Branch*

This report describes the diagnosis of a thymoma in a backyard Leghorn chicken. On October 29, 2019, a dead 7-year-old backyard Leghorn chicken was submitted to California Animal Health and Food Safety Laboratory System (CAHFS)-Turlock branch for necropsy, with a history of sudden death. At necropsy, a hemorrhagic soft tissue mass was observed in the cervical region of the neck. Microscopically, a densely cellular neoplasm which contained polygonal epithelial cells and pleomorphic lymphocytes was observed. Immunohistochemistry (IHC) for pan cytokeratin, vimentin, CD3, and CD79a were used to classify the lesion. Thymomas have been rarely described in avian species, and represent an atypical diagnosis in a backyard bird.

**Key Words:** Thymoma, backyard, chicken, pathology