

707 Strategies to reduce *Campylobacter*. Norman J. Stern^{*1}, E. A. Svetoch², B. V. Eruslanov², Y. N. Kovalev², L. I. Volodina², V. V. Perelygin², E. V. Mitsevich², I. P. Mitsevich², V. D. Pokhilenko², V. N. Borzenkov², V. P. Levchuk², O. E. Svetoch², and T. Y. Kudriavtseva², ¹USDA-ARS-Russell Research Center, Athens, GA, ²State Research Center for Applied Microbiology, Obolensk, Russia.

We evaluated anti-*Campylobacter* activity among 11,790 isolates of lactic acid bacteria from poultry production environments. We measured zones of *C. jejuni* inhibition surrounding the candidate strains and observed 279 isolates exhibiting antagonism. A *Lactobacillus salivarius* strain PVD32, was identified and deposited under provisions of the Budapest Treaty (NRRL B-30514). The cell-free, ammonium sulfate precipitate from the culture was termed the crude antimicrobial preparation (CAP). A zone of *C. jejuni* growth inhibition surrounding 10 ul of the CAP was observed. *C. jejuni* growth resumed when the CAP was pre-incubated with protease enzymes, thus demonstrating the peptide characteristic consistent with bacteriocin definition. The bacteriocin was further purified using a combination of ammonium sulfate precipitation, CM-Sepharose, Superose, and ion exchange chromatography. SDS-PAGE electrophoresis provided an estimated molecular weight of 6 KDa. MALDI-TOF analysis refined the molecular weight as 5,123 Da. The isoelectric point of the active fraction was determined at a pH of 9.0. The amino acid sequence of the bacteriocin was determined. The bacteriocin activity was stable following exposure to 90°C for 15 minutes. The moiety was purified and encapsulated in polyvinylpyrrolidone (PVP), and added to feed at levels of 250 mg/Kg feed. Day of hatch chicks were colonized with *C. jejuni*; log 10 cfu/gm feces mean levels in untreated, 7-day old control chicks was 6.21, while birds provided bacteriocin in feed 3 days prior to sampling was 1.98; untreated, 10-day old control chicks were colonized at a means of 8.99 and treated birds were colonized at 0.61. Among an additional 14 trials, comprised of 290 chickens, of varying ages, with varying amounts of bacteriocin administered, and challenge strains of *C. jejuni*, we consistently observed at least a one-million fold reduction in cecal levels among treated birds. The bacteriocin from this *L. salivarius* appears useful to control *C. jejuni* in poultry.

Key Words: *Campylobacter*, Poultry, Bacteriocin Therapy

708 Strategies to reduce *Clostridium perfringens*. G. R. Siragusa^{*}, Agricultural Research Service, USDA Russell Research Center, Athens, GA.

In the context of poultry production, *Clostridium perfringens* (*Cp*) represents both a potential food borne pathogen as well as a significant poultry disease. As a human food borne disease agent, this spore forming pathogen has accounted annually for over 248,000 total cases of food borne disease in the United States alone. As illnesses caused by this pathogen are not part of an active surveillance program in the U.S., the aforementioned figure is estimated to be a tenfold under reporting. Within the context of production, *C. perfringens* necrotic enteritis (NE) is a peracute disease associated with predisposing factors including coccidial infections, feed types and environmental stresses. Complete withdrawal of antibiotic growth promoters from feed is one factor strongly associated with NE. This presentation will present newly initiated research to both develop alternatives to antibiotics to control *Cp* in the live bird but also research into our current understanding of gut microbial ecology preceding this disorder. Our lab has been successful in isolating a number of bacteriophage lytic for *Cp*. These virions display a highly narrow spectrum of activity against different *Cp* strains however; it is noteworthy that they show a high level of variation in plaque morphology. Work is ongoing to isolate, purify and clone the phage lytic enzyme responsible for the lysis activity and for potential use as either a therapeutic or prophylactic agent in live production. Work is also underway to identify and characterize bacteriocins for the purposes of *Cp* control. This effort has so far resulted in strains of *Cp* which produce bacteriocins against other non-producing strains. The quantitative profiling of the gut flora during growout is a goal so far achievable only on a small sample basis. Work is underway to develop sets of tools based on non-cultural methodology that can be applied to large numbers of samples thereby enhancing the diagnostic and accuracy of a general gut microbial profile. Results from other antibiotic alternative strategies to control *Cp*, e.g. sodium chlorate, as well as a review of the potential role of quorum sensing in gut modulation of specific pathogens will be presented.

Key Words: *Clostridium perfringens*, Lytic Bacteriophage, Bacteriocins

Women and Minority Issues in Animal Agriculture Symposium

709 Gender and animal agriculture. C. Sachs^{*}, Rural Sociology and Women's Studies, Penn State University, University Park.

Women have become increasingly involved in agriculture in the U.S. in recent years. More women are farming on their own, while others are more involved in decision-making with their spouses or other agricultural partners. Women farmers are more likely to be involved in animal agriculture than in crop production. Also, women on farms extensively participate in farm tasks and decision-making related to livestock. This paper will use data from a national survey of 2,661 farm women collected in 2001 to understand the extent of women's involvement in farm tasks, farm decision-making, and off-farm work. This study will report differences in women's involvement in tasks and decision making in livestock production by type of farm, type of livestock, sociodemographic characteristics of farm women, and region.

710 A respect for the land. A. J. King^{*}, University of California - Davis.

Historically, Japanese, Chinese and Mexican Americans have made valuable contributions to farming in the West. Today, many Hmong families

have leased lots of a few acres in Washington and California to raise specialty crops that are sold at local farmers markets. There are also populations of East Indians growing several different types of row and fruit crops in Northern California. The number of African American farmers is significant when focusing on the West and the Midwest. Minority groups (African Americans, American Indians, Chinese, East Indians, Hispanics, Hmong, Japanese, Laotians and women) who choose farming as careers continue to face obstacles while contributing in several ways to the ample and diverse food supply produced in the Western United States. What are these obstacles, their similarities and differences? What unique contributions have been made to farming processes and distribution related specifically to animal agriculture? How are minority farmers redefining the profile of animal agriculture and engagement by grassroots organizations?

Key Words: Minority Farmers, Animal Agriculture, Obstacles and Contributions

Animal Health - Growth and Immunity

711 Preliminary evaluation of the efficacy of halofuginone lactate (Halocur[®]) as an aid in the prevention of cryptosporidiosis in Ontario dairy calves. B. D. Jarvie, K. E. Leslie^{*}, A. S. Peregrine, T. F. Duffield, and J. Scott Weese, University of Guelph, Guelph, ON, Canada.

Cryptosporidium parvum is a common cause of diarrhea in neonatal calves. The incidence of shedding of *C. parvum* and clinical disease is

high on many dairy farms. There are currently no approved products in North America for the prevention of cryptosporidiosis. In Europe, halofuginone lactate (Halocur[®]) is marketed for the prevention of cryptosporidiosis. The objective of this study is to evaluate the efficacy of halofuginone lactate as an aid in the prevention of cryptosporidiosis in dairy calves. Commercial dairy farms participated in this study from February to July 2003. A total of 509 replacement heifer calves from 24 farms were enrolled and randomly assigned to one of two groups.