Center for Food Safety, University of Georgia, Griffin, GA (http://www.griffin.uga.edu/cfs)
2003 Highlights

PROTOZOAN PARASITES

SEROPREVALENCE OF *TOXOPLASMA* AND *NEOSPORA* IN CATTLE AND SWINE

(Y. R. Ortega, G. Saavedra, and P. Torres)

Toxoplasma and *Neospora* are apicomplexans that can infect a variety of animals, some of which are used for human consumption. *Toxoplasma* also infects humans and can cause encephalitis. In pregnant women, fetal toxoplasmosis can result in abortions or produce birth defects, blindness, encephalitis, and chorioretinitis. Infection can be acquired by ingestion of *Toxoplasma* oocysts which are excreted in the feces of infected felines, ingestion of raw meats containing viable tissue cysts, or by organ transfusions. *Neospora* causes abortion in cattle.

Sera from 290 pigs and 329 cattle from U.S. and Peru were collected from slaughterhouses. Parasite-specific antibody responses to *Neospora caninum* and *Toxoplasma gondii* antigens were detected using the immunoblot assay.

Of the serum samples from Peru, 38/137 (28%) of the porcine and 127/253 (50%) of the bovine sera were positive for *T. gondii*, and 3 (2%) of pigs and 20 (8%) of cows were positive for *N. caninum*. In the U.S., 33/76 (43%) of cows and 23/153 (15%) of pigs were positive for *T. gondii* and 10 (13%) of cows and 1 (0.6%) of pigs were positive for *N. caninum*.

Antibodies to both *N. caninum* and *T. gondii* were found in 12 (5%) of 253 cows and 3 (2%) of 137 pigs from Peru. In the US, 5/76 (7%) of cows and 0/153 (0%) in swine sera were positive for both parasites.

INOCULATION STRATEGIES AND PARASITE RECOVERIES FROM EXPERIMENTALLY SPIKED PRODUCE

(C. Tatum and Y. R. Ortega).

Protozoan parasites have long been associated with water and foodborne outbreaks. Those parasites that most commonly have been associated with foodborne outbreaks, causing prolonged diarrheal illness, include *Cryptosporidium parvum, Cyclospora cayetanensis,* and *Giardia lamblia.* Most parasites need a host to multiply, therefore conventional propagation used with bacterial pathogens cannot be applied. Due to this limitation, recovery procedures are very crucial for parasite identification.

To evaluate recovery procedures, experimental spiking of basil, lettuce, and raspberries were done using three inoculation methods (spot, spray, and dip) and various concentrations of the three parasites (10^2 – 10^5 oocysts/produce). The greatest recoveries were obtained through spot inoculation followed by spray and dip inoculations. In all three food matrices *Giardia* cysts (20 – 90%) were recovered to a greater extent than *Cryptosporidium* while *Cyclospora* had the lowest recoveries. Recoveries of *Cryptosporidium* and *Giardia* were greatest on basil and lettuce than raspberries.