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Novel technologies and innovations for prevention and treatment of infectious diseases

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Bacterial antimicrobial resistance in both the medical and agricultural fields has become a serious problem worldwide. During the last 15 years, our laboratories have worked toward the identification of probiotic candidates for poultry which can actually displace *Salmonella* and other enteric pathogens which have colonized the gastrointestinal tract of chicks and turkeys, indicating that selection of therapeutically efficacious probiotic cultures with marked performance benefits in poultry is possible and that defined cultures can sometimes provide an attractive alternative to conventional antimicrobial therapy. Our studies have been focused on specific pathogen reduction, performance under commercial conditions and effects on both idiopathic and defined enteritis. We have also confirmed that selected heat-resistant spore-forming *Bacillus* species can markedly reduce *Salmonella* and *Clostridium* when administered in very high numbers and we have developed a novel and simple technique for obtaining cultured *Bacillus* spore counts, providing a cost-effective feed-stable inclusion in commercial poultry diets. In order to select even more effective isolates, we are still currently focused on the mechanistic action of the *Lactobacillus* probiotic previously developed as well as new *Bacillus* candidates. Current indications are that mechanism of action involves rapid activation of innate host immune mechanisms, providing an exciting possibility for identification of vastly superior and more potent probiotics. In this presentation, we summarize the safety and efficacy of individual monocultures for prophylactic and/or therapeutic efficacy against *Salmonella* infections under both laboratory and field conditions as well as the development of a novel, cost-effective, feed-stable direct fed microbials (DFM) with potential for widespread utilization and improved production, delivery and clinical efficacy for animal use.

Biography

G Tellez is affiliated to the University of Arkansas, USA.

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