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BV Science Poster

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Evaluation of long term immunity and protection against *Salmonella spp* by orally administrated inactivated vaccine

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Abstract: *Salmonella* is the leading cause of foodborne infections and is a major public health concern worldwide. Poultry meat and eggs are a major reservoir of foodborne *Salmonella* serovars and vaccination against the pathogen is one of the important measures to curb infectious outbreaks and reduce antibiotic use, currently a major concern for consumers. In this study we evaluated the efficacy of a commercially available inactive, orally administered, subunit vaccine (Biotech Vac Salmonella) and determined if the immune response was protective and persistent (long-term immunity) against mobile *Salmonella spp.* in two separate commercial layer hen flocks (n=120,000 layers/lot) located in Pergamino, Buenos Aires, Argentina. Pullets were given 2 doses of Biotech Vac Salmonella administered at day 3 and 16 post hatch; the third dose was administered in Lot 1 at 91 days post-hatch and in Lot 2 at 84 days post-hatch. Intestinal mucosal scrapings and serum were collected from 15 birds at 6, 21, 33, 67 and 89 weeks post hatch in Lot 1 and 5, 13, 22, 56 and 78 weeks post-hatch in Lot 2. Biotech Vac Salmonella specific mucosal immune response (sIgA) and systemic immune response (IgY/IgG) was evaluated by a proprietary antigen capture ELISA and S/P ratios calculated to determine vaccine specific antibody response. Results show that at all sampling time points after the administration of Biotech Vac Salmonella there was significant ($p < 0.05$) sIgA mucosal and IgY/IgG serum antibody production that persisted for the duration of the field trials; 89 and 78 weeks respectively. Mucosal immune responses were considered protective when S/P ratios were greater than 2.0. Presence or absence of *Salmonella spp* was evaluated directly in the bird or in the environment by traditional microbiological culture methods. Throughout the course of the field trial there were no samples (birds or environmental) positive for *Salmonella spp.* This study provides strong evidence that vaccination with Biotech Vac Salmonella induces a strong mucosal and systemic immune response and protects poultry from *Salmonella spp* infection. Furthermore, this protective response provides long-term immunity important for long life poultry (layers and breeders).