**­­­­­­Impact of a *Macleaya cordata* derived alkaloid extract on serum biochemical indices of broiler chickens under necrotic enteritis challenge**

G. D. Xue\*, R. A. Swick†

\*Phytobiotics Futterzusatzstoffe GmbH, Wallufer St 10 A, 65343 Eltville, Germany †Department of Animal Science, School of Environmental and Rural Sciences, University of New England, Armidale, NSW 2351, Australia

Necrotic enteritis (NE) causes significant economic losses in the broiler chicken industry. A standardized blend of plant-derived isoquinoline alkaloids (IQA) derived from *Macleaya cordata* has shown to have direct anti-inflammatory potency and alleviated the impacts of NE on broiler chicken performance. This study investigated the effects of IQA supplementation on serum biochemical indices of broiler chickens under NE challenge. A 2 × 2 factorial arrangement of treatments was employed with factors: NE challenge (no or yes), and additives (no additive or IQA at 0.15 g/kg) in starter, grower and finisher diets. Birds were challenged with *Eimeria spp.* on d9 and108-109 *Clostridium perfringens* on d14*.* Each treatment had 7 replicate floor pens with 17 birds each. NE challenge negatively affected growth performance and livability indicating successful NE challenge of birds. On d16, NE only decreased (P < 0.05) triglyceride and free triiodothyronine levels in control groups but not in the IQA fed group. On d24, IQA fed groups had higher total cholesterol (P < 0.05) and triiodothyronine (P < 0.001) levels regardless of challenge. This study suggests that IQA may protect broilers from NE by mitigating inflammation and modulating physiological cascades, indicating its role as a promising antibiotic alternative.