

2nd International Conference on

FOOD CHEMISTRY & NUTRITION

July 24-26, 2017 Vancouver, Canada



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Beneficial effect of *Bidens pilosa* on gut microflora and chicken health

Statement of the Problem: Coccidiosis is an economically important disease in the poultry industry. It causes an annual loss of 3 billion US dollars. *Eimeria* species are protozoan parasites that infect the intestinal guts and cause symptoms and even death in poultry. European union plans to ban the preventive use of anti-coccidial chemicals by 2020 because of their food safety and public health issues. Edible plants are emerging as an alternative option for coccidiosis control. However, their modes of action, efficacy and active compounds need to be elucidated prior to the commercial utilization.

Methodology & Theoretical Orientation: The bioactivity-directed fractionation and isolation (BDFI) strategy was used for identification of active compounds of BPP. Additionally, field trial study showed that BPP has less drug residue and resistance compared to the commercial drugs. We also performed pyrosequencing of the PCR amplicons based on the 16S rRNA genes of gut bacteria in chickens.

Findings: In the work, we first reported that the product (BPP) of *B. pilosa*, an edible and medicinal plant, suppress coccidiosis as evidenced by survival rate, birds' appearance and gut pathology in chickens. Next, metagenomics studies showed that BPP modulated gut bacteria in chickens, including probiotic augmentation and harmful bacteria reduction.

Conclusion & Significance: We found that *B. pilosa* affected the composition of bacteria which was related with body weight gain, feed conversion ratio and gut pathology in chickens. In summary, this study suggests that *B. pilosa* has beneficial effects on growth performance and protozoan infection in chickens probably via improvement of gut bacteria. Currently, we are completing toxicology and drug residue study of BPP in an attempt to file and investigational animal drug application.

Biography

Lee-Tian Chang are research and development on herb medicine(s) and diabetes/ obesity animal models. His team developed *Bidens pilosa* and its active phytochemicals as an alternative anticoccidial diet additive on chickens. Two related patents and two technique transfer were approved. This study also found *B. pilosa* improved chicken gut microbiome. Research and development of a phytochemicals to improve the health of broiler/layer and replace antibiotics on chicken feed additives is main purpose of this project.

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