

THE EDUCATION UNIVERSITY OF HONG KONG
FACULTY OF LIBERAL ARTS AND SOCIAL SCIENCES

Research Output/Impact/Knowledge Transfer Prize
for the Dean's Research Fund 2019/20

Brief Introduction of Awardee's

Research/KT Publication/Study/Output and Future Research/KT Development

Awardee (Dept): Dr Deng Wenjing, Assistant Professor (SES)

Publication Title/KT project: Environmental Science - Veterinary antibiotic residues in drinking water, food and children's urine: implication to children health

A. *Briefly introduce your research/KT publication/study/output for which you have received the prize.*

Veterinary antibiotics (VAs) have been widely used to treat infectious diseases in humans and to prevent infectious diseases in animals. They are also frequently used as growth promoters in aquaculture, agriculture and livestock products. As a result of this extensive antibiotic use, a variety of antibiotic residues have been found in the drinking water, meat, milk, and egg products. The health effects of antibiotic residues in food have attracted increasing concern in recent years. Contamination with antibiotics has been found to generate various harmful effects in the human body at low concentrations, even link with the development of obesity and type 2 diabetes with glucose homeostasis disturbances. Children are more vulnerable than adults to antibiotics. Epidemiological studies have also observed that early-life exposure to antibiotics was positively related to the risk of childhood obesity.

There is an urgent need to estimate the many kinds of antibiotic residues in food, especially in meat, milk, and eggs, which are heavily consumed by Hong Kong's population. Hong Kong has the densest population in the world. The daily meat consumption of the more than 7 million people in Hong Kong was 4573 pigs and 23 tons of poultry in 2015, and the total fish pond production in Hong Kong amounted to 2092 tons (AFCD, 2016). China and the United States, which are the top two countries in global antibiotic consumption (46% of the total) in food animal production, are two important meat suppliers for Hong Kong. The results of our previous study and recent monitoring studies suggest that antibiotics are widespread in Hong Kong and the Pearl River estuary (Deng et al., 2016). Because of Hong

Kong's high meat intake and wide range of pollution, VAs might pose risks to humans (<http://www.cfs.gov.hk/cindex.html>). However, previous studies in Hong Kong have mostly investigated the occurrence and fate of antibiotics in the aquatic environment or sewage. Data regarding antibiotic intake are limited. The current risks associated with antibiotics may be substantially underestimated.

My studies aimed to learn more about VAs uptake from drinking water, food, preschool children's VAs burden from dairy food was studied on a small scale in Hong Kong. Results can be used to improve our society and protect public health, especially for children health.

B. How you used/will use your prize and perhaps its usefulness to your research/KT development?

This prize provides a remarkable support to my research development on veterinary antibiotics (VAs) residues in drinking water, food and impact to children health. With this prize, the concentrations of VAs residues in drinking water, food and children's urine will be analyzed in a larger scale. The exposure levels of young children via food intake will also be estimated. The research could provide policy makers with a valuable insight into food safety in this global city and help them formulate appropriate preventive strategies, such as safeguard drinking water and food.

Secondly, the prize can provide a preliminary design of a portable and quick detector of VA residues in the drinking water and meat.

C. Expected research/KT outcomes/outputs/impacts arising from this prize.

One output (journal paper) will be published. Trial design of a portable and quick detector of food VA residues