



The Institut Pasteur in Cambodia (IPC) provides an internship of practical experience leading to a Master or DES thesis, under supervision of IPC researchers.

**Title of project: ESBL Resistance profile of Enterobacteriaceae isolated from food in Cambodia**

**Supervisor at IPC, and contact:**

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**Duration:** 4 months from 1<sup>st</sup> January 2016 until 30 April March 2017

**Eligibility:**

Applicants should be at least in second year of a Master's program or in third year of DES program from the University of Health Sciences (UHS), Royal University of Agriculture (RUA), Royal University of Phnom Penh (RUPP) and Institut of Technology of Cambodia (ITC).

**How to apply:**

Applicants have to send a CV, motivation letter, 1 recommendation letter, including one from Director of Master's or DES program, and academic results to respective IPC supervisor.

**Selection procedure:**

Applicants will be selected based on their application documents and interview. Uncompleted application documents will not be considered.

**Desired submission date:**

Before 1<sup>st</sup> December 2016

**Brief description of objectives, methodology and expected outputs:**

Antimicrobial resistance in bacteria has emerged as a problem in both human and veterinary medicine. One of the currently most important resistance mechanisms in Enterobacteriaceae, which reduces the efficacy even of modern expanded-spectrum cephalosporins (except cephamycins and carbapenems) and monobactams is based on plasmid-mediated production of enzymes that inactivate these compounds by hydrolyzing their b-lactamring. Such resistance is encoded by an increasing number of different point-mutational variants of classical broad-spectrum b-lactamases (BSBL). These variants are called extended spectrum b-lactamases (ESBL): most are derivates of TEM and SHV b-lactamase families, Extended-spectrum  $\beta$ -lactamase (ESBL)-producing *Enterobacteriaceae* with are rapidly increasing worldwide and pose a threat to health care. ESBLs have been isolated from animals and different food products.

Since the first description of ESBL producing Enterobacteriaceae isolated from hospitalized humans, many nosocomial outbreaks have been reported. However, since a few years, there is an increase in the detection of ESBL producing strains in the community. More recently, reports have also raised concern about the dissemination of ESBL producing *E. coli* in healthy food producing animals in several countries in Europe and Asia. Therefore, the impact of healthy farm animals as a possible reservoir for ESBL producing Enterobacteriaceae on the food processing chain has to be assessed.

The aim of the present study was to screen for the occurrence of ESBL producing Enterobacteriaceae in food product collected during September 2016-February 2017 in Food microbiology laboratory of IPC.

### **Method**

To joint these goals, all enterobacteriaceae collected during the period of September 2016-February 2017 will tested by using API 10E/NE and discs synergy test (Amoxicillin+clavunic acid, Artreonam, cefepime, cefotaxime, and ceftazidime).

### **Expected results:**

This project will determine the relationship between ESBL presence in food that will be dissiminated to human through the food consumption in Cambodia.

### **Reference:**

1. Nadine Geser, Roger Stephan and Herbert Hächler. Occurrence and characteristics of extended spectrum b-lactamase (ESBL) producing Enterobacteriaceae in food producing animals, minced meat and raw milk. BMC Veterinary Research 2012, 8:21.