Research Title	The Effects of Pesticide Usage on the Prevalence of Antibiotic Resistance in Bacteria from Agriculture soil and Karen Communityin Ta Phoen Khi Village, Suphan Buri Province.
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This study was focused on the impact of long-term chemicals using in agriculture soils on the pathogenic bacteria that isolated from cultivated and community areas. Thus, antibiotic resistant and heavy metal tolerance *Escherichia coli* were observed. The study community was located on the hill and near the natural park. Almost of people carry on an occupation as agriculturist, which was long-term chemical used. The 260 *E. coli* strains were isolated from agriculture and water/sediments of small stream near the community. Antibiotic susceptibility testing on 12 antibiotic agents found that most of *E. coli* was classified as antibiotic resistant strains (80.0-100.0%). Consideration on MAR index, referred to multi-drug resistance bacteria, showed that MAR index of *E. coli* from agriculture soils after harvest period was higher that during crop production, with the values 0.414-0.417, and 0.293, respectively. However, MAR index of *E. coli* from water/ sediments in community had higher than the others. By *E. coli* at central of community area had the highest of multi-drug resistance strains (MAR index = 0.500). Focused on *E. coli* susceptible to each antibiotic agent it was found high proportion of beta-lactam resistant strains for instance 60.0-85.0% of cephem, 66.7-95.0% of penicillin, and 25.0-70.0% of beta-lactamase inhibitor combination. Conversely, the lowest of phenicol resistant *E. coli* was occurred (5.0-26.7%). Likewise, similarity of antibiotic resistance expression was determined by Hierarchical cluster and categorized into 2 clusters. Cluster 1 consisted of *E. coli* from agriculture soils and upstream sediment, all agriculture soil samples had similar expressed to antibiotic resistance than the others. Cluster 2 included *E. coli* from sediments of central of community area and downstream. The obtained data indicated that anthropogenic activities such as crop production and people in rural community had affected on antibiotic resistance bacteria. Moreover,

heavy metal tolerance *E. coli* was determined by MIC (Minimum inhibitory concentration) method based on zinc, nickel, cadmium, copper, and chromium. The results found that *E. coli* isolated from agriculture soils during crop production had the highest of MIC values of 5 heavy metals (705-2,560 micrograms/milliliter), followed by agriculture soils after harvest (117.5-2,240 micrograms/milliliter), and sediments of community area (427.5-1,680 micrograms/milliliter). It suggested that co-selection process of antibiotic resistant and heavy metal tolerance were occurred in agriculture soils and sediments. All heavy metals were represented the chemical substances that accumulated from the study sites. However, fallow period (not contact to chemical substances) had influence to reduced heavy metal properties in *E. coli*. In addition, heavy metal had the impact to induce antibiotic resistant *E. coli*. For instance, high level of MIC of zinc correlated to the increasing of tetracycline (R^2=0.643), sulfa-methoxazole (R^2=0.955), and trimethoprim (R^2=0.955) resistant *E. coli*. MIC of nickel, cadmium, copper, and chromium also had positive relationship to caftazidime (R^2=0.723-0.974) resistant *E. coli*.