

<b>Resrarch Title</b>	Effect of land application of composts on antibiotic resistance bacteria in soil
<b>Researcher</b>	Dr. Simanata Threedeach, Miss. Jutharat Srichoopium, Miss. Piangkamon Yuvananont
<b>Research Consultants</b>	Assoc. Prof. Dr. Wilai Chiemchaisri
<b>Organization</b>	The Environmental Center, Faculty of Science and Technology, Suan Dusit University
<b>Year</b>	2019

This study was investigated antibiotic resistant properties from pathogenic bacteria which selected from the composts and compost materials. Recently, concern on the widespread of antibiotic resistant bacteria (ARB) into environmental sources, humans and animals due to misused of antibiotics. Materials for compost processes in this study included food waste from kitchen, activated sludge and chicken manure. Moreover, small pieces of wood and leaf were add to composting. Investigated ARB from 3 types of composts for 8 weeks in 150 L reactors in aerobic condition. *Escherichia coli* as a presentative of pathogenic bacterial in this study. The results of ARB from materials before composting indicated that activated sludge had high level of antibiotic resistant (MAR index = 0.529) as comparison to food waste (MAR index = 0.207) and chicken manure (MAR index = 0.207). First phase of composting, temperature inside composts were increased to 40-60 °C. Pathogenic bacterial such as coliform group, which survival under high temperature condition had developed to high level of antibiotic resistant and decreased to low level depended on time period. The results of ARB development in 8 weeks of composting point out that MAR index of *E. coli* selected from food waste, activated sludge and chicken manure composts were 0.214, 0.336 and 0.293, respectively. Consideration on patterns of antibiotic resistant, 60.0% of *E. coli* from food waste compost classified as ARB which resisted to 1 antibiotic group. However, *E. coli* from activated sludge (90.0%) and chicken manure (70.0%) composts had high level of antibiotic resistant, it classified as multi-drug resistant bacteria or resisted  $\geq 2$  antibiotic groups. All composting periods, the level of antibiotic

resistant were decreased depended on time. Food waste compost had lowest level of antibiotic resistant *E. coli*. Moreover, 8 weeks of composting, population of microorganisms, coliform bacteria and *E. coli* in all composts were in range 7.62-8.21 log CFU/g, 5.37-5.77 log CFU/g and 4.30-4.94 log CFU/g, respectively. The population of pathogenic bacteria such as coliform bacteria (0.36-0.55%) and *E. coli* (0.05-0.09%) had very low proportion as compared to all microorganisms detected in composts. It should be storage the composts in this study before apply to use.