**Improved microbial screening assay for antibiotic residues in meat**

Hye-Young Park, So-Young Chung, Younjeong Han, Eunchae Ryu, Minsun Lee, Seongsoo Park, Chul-Joo Lim, Sun-Ok Choi

Ministry of Food and Drug Safety, Gyeongin Regional Food and Drug Administration, phy797@korea.kr

137 Juanro, Namgu, Incheon, 402-835, Republic of Korea

Antibiotics are widely used to treat infections in humans and are applied intensively for veterinary purposes. Incorrect use of these drugs may leave residues in edible tissues. Antibiotic residues can cause direct toxic effects on consumers or allergic reactions in hypersensitive individuals. Therefore, simple and reliable analytical methods are required to monitor these antibiotic residues in edible tissues of livestock animals. Microbial screening assay has been used to evaluate antimicrobial activity since the discovery of the first antibiotics. Despite their limitations, microbial screening assay is commonly used to determine antibiotic potency of pharmaceutical dosage forms.

This study proposes an improved high microbial method for the simultaneous performance of the first screening for antibiotic residues in meat. Microbial screening assay includes process which can optimize thickness and amout of culture medium. It is based on growth inhibition of *Bacillus megaterium*(ATCC 9885),

*B. subtilis*(ATCC 6633)*, B. cereus*(ATCC 11778), *B. stearothermophilus*(ATCC 10149), *Escherichia coli*

(ATCC 11303), *Kocuria rhizophila*(ATCC 9341) on culture medium. The microbial screening assay will be validated using standard solutions of 93 antibiotics with meat tissues. Activity patterns will be obtained when antibiotic solutions are assayed on six plates prepared with different mediums and microorganisms. The different activity patterns will be obtained for the main antibiotic groups: [tetracyclines](http://europepmc.org/abstract/med/8647303/?whatizit_url_Chemicals=http://www.ebi.ac.uk/chebi/searchId.do?chebiId=CHEBI%3A27902), [aminoglycosides](http://europepmc.org/abstract/med/8647303/?whatizit_url_Chemicals=http://www.ebi.ac.uk/chebi/searchId.do?chebiId=CHEBI%3A47779), [macrolides](http://europepmc.org/abstract/med/8647303/?whatizit_url_Chemicals=http://www.ebi.ac.uk/chebi/searchId.do?chebiId=CHEBI%3A25106), penicillins, sulfonamides, quinolones, cephalosporins, peptides, amphenicols and polyethers at maximum residue limits(MRLs) concentration. This method, as microbial screening assay for antibiotic residues, can be used screening test to identify antibiotic groups.