

# Biofilm of Antibiotics Resistant *Salmonella Typhimurium* and *Salmonella Enteritidis* Against Detergents

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## ABSTRACT

*Salmonella* is able to produce biofilm which is more resistant toward disinfectants and antibiotics than its planktonic form. *Salmonella typhimurium* from beef and *Salmonella Enteritidis* from raw vegetables isolates were tested for their susceptibility using 18 different antibiotics. *Salmonella typhimurium* isolate was resistant toward Streptomycin, Sulfamethoxazole, Penicillin, Erythromycin, Tetracyclin, Ampicillin, Rifampicin and Clarithromycin while *Salmonella enteritidis* was resistant toward Amikacin, Streptomycin, Penicillin, Ciprofloxacin, Erythromycin, Ampicillin, Tetracyclin, Rifampicin, Cephalothin, Amikacin, Chloramphenicol and Clarithromycin. Both of *Salmonella* isolates showed MAR index > 0.2, indicating that these isolates might be originated from high risk sources. Out of the five detergents, Detergent 3 (D3) (Linear alkyl Sulfonic acid) was found to be the most effective. The Minimum Inhibition Concentrations (MICs) and Minimal Bactericidal Concentration (MBCs) were ranged from 6250 – 25,000 µg/ml and 25,000 to > 50000 µg/ml, respectively. Biofilm-producing ability of antibiotics-resistant *Salmonella typhimurium* and *Salmonella enteritidis* were inhibited at 12,500 – 25,000 µg/ml and eradicated at >50000 µg/ml. Therefore, Detergents showed potential antimicrobial activity against *Salmonella*.

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## Introduction

Foodborne illness is a major international public health concern (Carl *et al.*, 2003) and this is proven by the microbial contamination affecting most foodstuffs consumed in the world (Concina *et al.*, 2008). *Salmonella* are among one of the most important causes of foodborne gastroenteritis worldwide. The infection of *Salmonella* is known as Salmonellosis. They are gram-negative, facultative anaerobes and inhabit the intestinal tract of animal (Chia *et al.*, 2009).

Antibiotics are the only effective therapy for the food-borne infections (Mao *et al.*, 2007). One of the most important food safety concerns is the increasing antibiotic resistance of food-borne pathogens. Recently, many aerobic and anaerobic bacteria were reported to show antibiotic resistance