

# Multidrug-resistant *Salmonella* spp. isolated from environment of chicken farms

Syahidiah SAT, Yuvaneswary V, Sakshaleni R, Rafiza S

Institute for Medical Research, National Institute of Health, Malaysia

## ABSTRACT

**Introduction:** Salmonellosis is one of the main causes of bacterial enteritis in humans with 64 cases reported in Malaysia, during 2020. Most studies in Malaysia focused on clinical samples, chicken meat, and the market to determine its epidemiology. The study aimed to determine antimicrobial resistance of *Salmonella* spp. isolated from chicken farm environments in Selangor, Malaysia. **Materials and methods:** Twenty-three soil and twenty effluent samples were collected from 23 poultry farms. Samples were enriched with buffered peptone water and incubated for 18 hours at 37°C. Subsequently, 0.1 ml of samples were incubated in 10 ml of Rambaquick liquid medium for 7 hours at 41°C. Further, spread plate method was used to inoculate samples on CHROMagar for *Salmonella*. The VITEK 2 system was used to identify the isolates and tested for antibiotic susceptibility according to Clinical & Laboratory Standards Institute (CLSI) guidelines. **Results and conclusion:** A total of 24 *Salmonella* spp. was isolated, with 65% (15/23) from soil samples and 45% (9/20) from effluent samples. Most of the isolates were resistant to ampicillin (63%), while 46% was resistant to ciprofloxacin. However, 87.5% of isolates were found to be susceptible to trimethoprim/sulfamethoxazole. On top of that, 67% of isolates were resistant to more than 3 types of antibiotics and were regarded as multidrug resistant organisms (MDR). The multiple antibiotic resistance (MAR) index was calculated, with mean of 0.42 (SD=0.096), and 95.8% of the isolates have MAR index of more than 0.2, which implies high source of contamination. Multidrug resistance *Salmonella* spp. was predominately observed in this investigation, with most isolates found to have high MAR index, implying that antibiotics are widely used and a source of instituted contamination in chicken farms. More stringent monitoring and control of antibiotic use in chicken farms by relevant authorities is required to prevent the spread of MDR bacteria in the environment, which might be fatal to humans in the event of food contamination with few treatment options.