**BIOFILM AND PLANKTONIC CELLS OF *ESCHERICHIA COLI* AND THEIR ANTIMICROBIAL RESISTANCE PATTERNS**

S.A.I.C. Subhasinghe1, H.M.T.K Karunaratha1, S.P. Kodithuwakku2, H. M. H. N. Bandara3, R.S Kalupahana1, K.S.A. Kottawatta1\*

1Department of Veterinary Public Health and Pharmacology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya.

2Department of Animal Science, Faculty of Agriculture, University of Peradeniya

3Bristol Dental School, University of Bristol, UK

\* Corresponding author (E. mail - sarunika@yahoo.com)

Antimicrobial resistance (AMR) is a worldwide concern including Sri Lanka. In the first part of the study, AMR associated with poultry layer farms in Kurunegala district of Sri Lanka was investigated. Novel findings suggested that AMR is 100-1000 times higher when the bacteria present as biofilms. Therefore aim of this study was to establish *in vitro* biofilms from planktonic and biofilm forms of *E.coli* in order to compare the resistance profiles of two forms.

Fifty-two layer farms were selected. From each farm, a water sample and a swab from the same drinker containing visible biofilms were collected to isolate planktonic and biofilm forms of *E.coli* respectively. The AMR profiles and the *in vitro* biofilm making potentials of the two forms were tested utilizing standard methods and biomasses of the formed biofilms were quantified. ATCC 25922 *E.coli* was used as the control organism.

For tetracycline and ampicillin *E.coli* isolated from biofilms showed higher resistance (66.67%, 60%) than planktonic bacteria (60%, 36.67%). A difference was not found for cefotaxime.

Both planktonic and biofilm forms of *E.coli* produced biofilms successfully in 96-well plates and significantly higher absorbance level (*P* < 0.05) was observed in wells containing *in vitro* biofilms prepared using *E.coli* isolated from visible biofilms of drinkers.

These preliminary results are indicative of higher antimicrobial resistance and higher potential of biofilm formation associated with *E.coli* isolated from biofilms. Minimum antimicrobial concentrations (MIC) inhibiting planktonic and biofilm associated *E.coli* is being assessed using micro-broth dilution technique on optimized *in vitro* biofilm platform.

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