**Effect of Essential Oils on Biofilms Formed By *Salmonella* Spp. Isolated From Broiler Chicken Meat**

R.M.M.S. Jayathilaka1, S.U. Pathiranage1, G.K.N.G.Thilakarathna1 J.L.C.S. Perera1, D.D. Wickramanayake, D.N.N. Madushanka1, J.K. Dissanayake2, T.S.P. Jayaweera1 and H.A.D. Ruwandeepika1\*

*1Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, 2CIC Poultry Farm, Horakandawila, Badalgama, Sri Lanka*

*\*ruwandeepika@yahoo.co.uk*

Bacterial biofilm pose a greater health risk in clinical environments as well as in food industries due to the persistent of biofilms on surfaces and due to its recurrent contamination. Microbes in biofilms are more resistant to biocides including cleaning agents and antibiotics. This has led to search of natural effective alternatives for the control of biofilms. In this aspect, essential oils (EOs) are considered as promising natural compounds for the food industry due to their preservative and antimicrobial nature. This study investigated the effect of three EOs *viz,* Cinnamon leaf oil, Cinnamon bark oil and Clove oil on biofilms formed by *Salmonella* spp isolated from broiler chicken meat. 16 *Salmonella* isolates have grown on 96 wells microtiter plates and the effectiveness of EOs was carried out using the biofilm quantification method of crystal violet staining. This study revealed that all the tested EOs has anti-biofilm activity when compared to the non-treated *Salmonella* biofilms. All the three tested EOs showed similar effectiveness against biofilms formed by 11 *Salmonella* isolates (11/16). Biofilms formed by four isolates (4/16) showed higher inhibition with cinnamon bark oil and clove oil compared to the cinnamon leaf oil. Biofilm formed by one isolate did not show inhibitory effect with cinnamon bark oil when compared to the untreated control, but it was significantly reduced by other two EOs. Further this study showed that biofilms formed by different *Salmonella* isolates have different anti-biofilm capacities. This study concluded that Cinnamon leaf oil, Cinnamon bark oil and Clove oil have anti-biofilm activity against *Salmonella* isolates tested. Findings of this study will provide valuable information for improving EOs for controlling, preventing biofilms in food industries as well as in medical and veterinary field.

*Key words: Biofilm, Effectiveness, Essential oils (EOs), Food, Salmonella*