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Effect of pH and different growth media on the biofilm formation by Group B *Streptococcus* isolated from pregnant mothers in Sri Lanka

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Background: *Streptococcus agalactiae* (GBS), a major cause of neonatal morbidity and mortality, is transmitted from mother to neonate via placenta or during birth. Biofilm formation maybe an important factor in GBS pathogenesis.

Objective: This study aimed to determine the effects of pH, different culture media and nutritional composition on biofilm forming ability of GBS isolated from pregnant women.

Method: A total of 30 GBS vaginal isolates from pregnant women of > 35 weeks of gestation were tested for biofilm forming ability in Todd Hewitt Broth (THB) at pH of 4.5, 6 and 7. Ten of these isolates were tested for biofilm formation in different types of growth media namely THB, brain heart infusion broth, tryptic soy broth, Mueller Hinton broth and nutrient broth. Further they were tested for influence of glucose on the biofilm formation. Biofilm formation was detected by MTT viability assay.

Results: At the highest pH (pH 7) 13/30 (43.3%) GBS isolates showed Strong Biofilm Formation (SBF) and 36.6% (n= 11) Moderate Biofilm Formation (MBF). Growth was reduced and 90% (n=27) were non biofilm formers at pH 4.5. Ten isolates were screened for biofilm formation using the THB alone and with 1% glucose. In THB alone, all isolates were SBF while in THB with 1% glucose, 3 (30%) were SBF, 5 (50%) were MBF and 2 (20%) were weak biofilm producers. Ten isolates tested in 5 types of growth media did not show a statistically significant difference in biofilm forming ability.

Conclusion: This study shows that vaginal GBS isolated from pregnant mothers in Sri Lanka are biofilm producers. Biofilm forming ability is weak at low pH and is enhanced at high pH. In laboratory settings glucose concentration in the growth medium influences biofilm production.