

TITLE: BIOFILM FORMATION OF *Acinetobacter* SPECIES AND *Stenotrophomonas maltophilia*: ANALYSIS OF BIOMASS, EXTRACELLULAR MATRIX AND METABOLIC ACTIVITY PRODUCTION

AUTHORS: SILVA, N.B.S.; ALVES, P.G.V.; SILVA, S.F.; MARQUES, L.A.; FERREIRA, M.G.; BESSA, M.A.S.; MENEZES, R.P.; PEDROSO, R.S.; PENATTI, M.P.A.; RÖDER, D.V.D.B.

INSTITUTION: UNIVERSIDADE FEDERAL DE UBERLÂNDIA, UBERLÂNDIA, MINAS GERAIS (RUA CEARÁ, S/N, UMUARAMA, CEP 38402-020 UBERLÂNDIA - MG, BRAZIL)

ABSTRACT:

Recent studies have been reported some microorganisms with ability to form biofilm, such as *Stenotrophomonas maltophilia* and *Acinetobacter calcoaceticus*- *Acinetobacter baumannii* (ACB) complex. These microorganisms have been coisolated and are known to express its pathogenicity such as pili, flagella and adhesins which contributes to adherence, auto-agregation and colonization of biotic and abiotic surfaces. This study aimed to evaluate biofilm formation ability in samples isolated from blood, hands and environment of *Stenotrophomonas maltophilia* and *Acinetobacter* species. The study was carried out at Neonatal Intensive Care Unit (NICU) of the Federal University of Uberlândia. The samples were collected between March to December 2018 from environment, healthcare worker's hands and blood culture from neonates with infection and were identified by MALDI-TOF. The research of biofilm formation was done using the microplate technique and the quantification of biofilm formation was done by three methods: crystal violet to evaluate biomass, safranin to extracellular matrix and 2,3-bis (2-methoxy- 4- nitro- 5 -sulfophenyl) -5- [(phenylamino) carbonyl] - 2H -tetrazolium hydroxide (XTT) to metabolic activity. ATCC 19606 *Acinetobacter baumannii* was used as control. Five samples of *Stenotrophomonas maltophilia* and 10 of *Acinetobacter* species were collected and were identified as *A. bereziniae*, *A. baumannii*, *A. pittii* and *A. nosocomialis*. All the isolates were able to form biofilm. Nine samples of *Acinetobacter* species produced less biofilm than the control at least one method used and one sample of *A. pittii* isolated from the hands was more effective, producing more biomass, extracellular matrix and metabolic activity compared to the control. Three samples of *Stenotrophomonas maltophilia* produced less biofilm compared to the control and one sample isolated of the hands was able to produce more biofilm in the three methods used in the study. The other sample was not statistically significant. This study demonstrated the biofilm production of two epidemiologically important species using three colorimetric detection methods. The ability to form biofilm has created challenges and epidemics in the health treatment, mainly in critically ill patients in NICU. Because of this becomes necessary develop methods to sample sessile bacteria and develop control strategies.

Keywords: biofilms, hospital environments, infant newborn

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