

TITLE: THE DIALYSATE OF HEMODIALYSIS CAN BE A SUBSTRATE TO DUAL SPECIES BIOFILMS FORMATION

AUTHORS: ¹BRANCA, M.T.; ¹COSTA, P.S.B.; ¹OLIVEIRA, L.T.; ¹MARTINS, C.H.G.; ²JAMUR, M. C.; ¹PIRES, R.H

INSTITUTIONS: ¹UNIVERSIDADE DE FRANCA (AV. DR. ARMANDO SALLES DE OLIVEIRA, 201, PARQUE UNIVERSITÁRIO, 14.404-600 - FRANCA, SP, BRAZIL)

²UNIVERSIDADE DE SÃO PAULO – FACULDADE DE MEDICINA DE RIBEIRÃO PRETO (AV. BANDEIRANTES, 3900 - MONTE ALEGRE, 14049-900, RIBEIRÃO PRETO, SP, BRAZIL)

ABSTRACT:

Biofilms are surface-associated communities formed by microorganisms. These communities can be formed by microorganisms of the same species, same genus or even organisms of different kingdoms. Although the standardizations for biofilm monitoring are non-existent, they have already been found in the hemodialysis microenvironment. This work proposes to evaluate the dual-species biofilm formation among isolates of *Escherichia coli* and *Aspergillus niger*, *Pseudomonas aeruginosa* and *A. niger*, *Staphylococcus epidermidis* and *A. niger* collected from the water circuit of a Hemodialysis Service. The biofilms were formed in microplates (96 wells), in solutions that mimic the dialysis fluids, and incubated at 37°C for 72 hours in both aerobic and microaerophilic conditions. The violet crystal methodology quantified the biofilms biomass. Dual species biofilms were observed in all solutions tested. The basic solution proved to be the best hemodialysis fluid for the all dual species biofilm formation in aerobic growth condition. Under microaerophilic, for *P. aeruginosa* plus *A. niger* biofilms, the biomasses obtained in the basic solution were equal to those obtained in the dialysate; for *E. coli* plus *A. niger* and *S. epidermidis* plus *A. niger* biofilms, the dialysate with glucose was the best fluid for biofilm formation. The hemodialysis fluids may be a substrate for dual-species biofilm formation by the organisms tested. Good practices in handling patients, devices and environments are essential to control the microbial load in the dialysis environment.

Keywords: dual species biofilms, hemodialysis, dialysate, *Aspergillus*.

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