

O631

Abstract (oral session)

Intestinal anaerobic bacteria: in vitro ability to adhere and to grow as mono- or dual-species biofilm

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Objectives: On the basis of our recent data on the close association existing between the clogging of biliary stents and the development in their lumen of a polymicrobial biofilm, twelve anaerobic strains isolated from explanted stents and belonging to the genera *Bacteroides*, *Clostridium*, *Fusobacterium*, *Finegoldia*, *Prevotella* and *Veillonella* were investigated for their ability to adhere, to grow in sessile mode and to form in vitro mono- or dual-species biofilms. **Methods:** The ability to adhere and to form biofilm in vitro was evaluated by the quantitative biofilm production assay. Then, strains were investigated when growing as mono- and dual-species biofilms by Field Emission Scanning Electron Microscopy (FESEM) and Confocal Laser Scanning Microscopy (CLSM). Experiments on dual-biofilm formation were planned on the basis of the anaerobic strains isolated from each clogged biliary stent, by selecting those in which a couple of anaerobic strains belonging to different species contributed to the polimicrobial biofilm development. **Results:** We demonstrated the ability of the tested strains to adhere and to grow in a sessile mode to a different extent. Further, it was possible to point out a synergistic interaction of the involved species in forming dual-species biofilm. The FESEM analysis allowed us to distinguish between the two biofilm-forming bacterial species on the basis of their different features (rods or spear-shaped bacilli vs cocci). Further, this morphological approach offered the chance to approximately evaluate the relative contribution of the two interacting species to form the mixed biofilm. **Conclusion:** As far as we know this is the first report on the ability to in vitro adhere and to form single/dual-species biofilms exhibited by anaerobic strains belonging to the species *Bacteroides oralis*, *Clostridium difficile*, *Clostridium baratii*, *Clostridium fallax*, *Clostridium bifermentans*, *Finegoldia magna*, *Fusobacterium necrophorum*. Further, the in vitro development of dual-species biofilms by the couples *Fusobacterium necrophorum* + *Veillonella* spp, *Bacteroides fragilis* + *Finegoldia magna*, and *Finegoldia magna* + *Clostridium difficile* has a particular significance because of the above mentioned selective criteria. This finding is in favour of the possible co-aggregation of some species belonging to the intestinal microbiota to form in vivo sessile-growing polimicrobial communities.