Comparison of RNA extraction methods from biofilm samples of *Staphylococcus epidermidis* and other bacterial pathogens

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Due to its ability to form compact biofilms, *Staphylococcus epidermidis,* a normal inhabitant of the human skin and mucosa*,* has emerged as a leading cause of nosocomial infections, particularly, in patients with indwelling medical devices. The quantification of specific messenger RNA (mRNA) from these biofilms is crucial to understand the switching to the pathogenic mode of life and the interaction with the host immune system. There are a vast range of commercial available Kits to extract RNA from bacterial cells. Distinct extraction methods can yield different RNA quantity and purity and the success of RNA-based analysis depends to a great extent on that. Herein, five different commercial available Kits, namely: FastRNA Pro®Blue from MPBio, RNAspin Mini from GEHealthcare, PureZol RNA isolation reagent from Bio-Rad, PureLink™ RNA Mini Kit from Invitrogen and GenJET™ from Fermentas were tested using *S. epidermidis* and other gram positive (*L. monocytogenes*) and gram negative (*E. coli and S. Enteritidis*) biofilm-forming bacteria. Regarding the quantity and purity of mRNA isolated from *S. epidermidis* biofilms, the best method is, clearly, the MPBio isolating almost 25-70 times more RNA than the other tested methods. Concerning the RNA purity only the kits from Fermentas and Bio-Rad showed values below the accepted range for pure RNA. In conclusion, depending on the nature of our sample, these RNA extraction kits could not present the best performance. This way tests should be done in order to get high RNA yield and purity for downstream applications.