Electrochemical sensing of biomarker for diagnostics of bacteria-specific infections - DTU Orbit (16/12/2018)

**Electrochemical sensing of biomarker for diagnostics of bacteria-specific infections**

**Aim:** *Pseudomonas aeruginosa* is a pathogen that is prevalent in serious infections in compromised patients worldwide. A unique virulence factor of this bacterium is the redox-active molecule pyocyanin, which is a potential biomarker for the identification of *P. aeruginosa* infections. Here we report a direct, selective and rapid detection technique of pyocyanin.

**Materials & methods:** Pyocyanin was detected by amperometry at a relatively high potential where the pyocyanin signal was unaffected by background contributions. Results & conclusion: Pyocyanin was detected at concentrations down to 125 nM in a 50 μM mixture of interfering compounds with a reproducibility of $r^2 = 0.999$ ($n = 5$) within 200 s. The results document a step toward a point-of-care technique for diagnosis of *P. aeruginosa* infections.

**General information**

State: Published
Organisations: Department of Systems Biology, Infection Microbiology, Department of Micro- and Nanotechnology, Novo Nordisk Foundation Center for Biosustainability, Department of Microbiology, Risø National Laboratory for Sustainable Energy, Department of Photonics Engineering, Nano Bio Integrated Systems

Number of pages: 11
Pages: 2185-2195
Publication date: 2016
Peer-reviewed: Yes

**Publication information**

Journal: Nanomedicine
Volume: 11
Issue number: 16
ISSN (Print): 1743-5889

Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 4.19 SJR 1.302 SNIP 0.89
Web of Science (2017): Impact factor 5.005
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 4.08 SJR 1.27 SNIP 0.908
Web of Science (2016): Impact factor 4.727
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.92 SJR 1.395 SNIP 1.016
Web of Science (2015): Impact factor 4.889
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 4.04 SJR 1.462 SNIP 1.108
Web of Science (2014): Impact factor 5.413
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 4.44 SJR 1.739 SNIP 1.176
Web of Science (2013): Impact factor 5.824
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 4.21 SJR 1.67 SNIP 1.144
Web of Science (2012): Impact factor 5.26
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 4.29 SJR 1.741 SNIP 1.041
Web of Science (2011): Impact factor 5.055
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.26 SNIP 1.455