

A Selective Medium for Pyocyanin-dependent Fast Electrochemical Detection of *Pseudomonas aeruginosa* in Environmental Microbial Samples

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In this work, a selective medium was developed for pyocyanina-dependent qualitative detection of *Pseudomonas aeruginosa* in raw microbial samples using electrochemical analysis. To obtain an optimum nutritive formulation, the effect of different media (BYEB, LB, SDB, MHB, TSB, and NB), positive ions (K^+ , Na^+ , Ca^{2+} , Fe^{3+} , and Mg^{2+}) and selected additives (1-naphthylamine, acetamide, and benzylpenicillin sodium) on the amount of synthesized pyocyanin were investigated and compared. NB was found to be the most favourable medium for the electrochemical detection of pyocyanin, and Mg^{2+} was shown to be the most effective supporting additive ion for the detection. 1-Naphthylamine was shown to be the most effective supporting antibiotic reagent when supplied in the medium to enhancing the presence of pyocyanina compared to the other two antibiotics. The results indicated that the improved selective medium (ISM) can effectively inhibit/limit the growth of various microorganisms other than *P. aeruginosa* and obviously enhance the production of pyocyanin in environmental samples that contained *P. aeruginosa*. This study provided a method for simple and fast electrochemical detection of *P. aeruginosa* in complex microbial samples.

Keywords: *Pseudomonas aeruginosa*; pyocyanin; electrochemical detection; selective medium; differential pulse voltammetry

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