

EFFECT OF VARIOUS GROWTH CONDITIONS
ON PIGMENTATION OF *BURKHOLDERIA*
CEPACIA UL1

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**EFFECT OF VARIOUS GROWTH CONDITIONS ON
PIGMENTATION OF *Burkholderia cepacia* UL1**

By

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ABSTRACT

EFFECT OF VARIOUS GROWTH CONDITIONS ON PIGMENTATION OF *Burkholderia cepacia* UL1

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Pigmented bacteria or chromobacteria generally produce pigments to be utilised for cellular activities, cell protection and survival in stressful conditions. The bacteria of interest in this study i.e. *Burkholderia cepacia* UL1 was found to be capable of producing a blue-green pigment when supplemented with Mn^{2+} . Hence, the aims of this research work were to study the effect of different concentrations of Mn^{2+} , the influence of carbon and nitrogen sources, and the effect of different culture media on bacterial blue-green pigmentation. Overnight inoculums were inoculated into King B medium supplemented with different concentrations of $MnSO_4$, followed by the manipulation of carbon and nitrogen sources as well as the use of different culture media (with and without Mn^{2+} supplementation). The intensity of pigment productions was monitored using visual observation and spectrophotometric analysis at 24 hours interval for 3 days. From the results obtained, the intensity of pigment produced by *B. cepacia* UL1 increased as the concentration of Mn^{2+} was increased. The bacteria were capable of utilising all the tested carbon sources for pigmentation but were only able to use proteose peptone and yeast extract as nitrogen sources for the induction of pigmentation. Different shades of pigments were observed when the bacteria

were cultured in different culture media. In conclusion, the best concentration of MnSO_4 (within the tested range) for bacterial blue-green pigmentation is 9.0 mM. The optimum carbon source would be glycerol, whereas proteose peptone and yeast extract serve well as nitrogen sources. King B medium supplemented with Mn^{2+} induces *B. cepacia* UL1 to produce the blue-green pigment. The blue-green pigment is also found to be stable between pH 3.5 to pH 13.

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Last but not least, I extend my sense of gratitude to one and all, who directly or indirectly, have lent their hand in my study.

DECLARATION

I hereby declare that the project report is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

Chow Suet Yan

APPROVAL SHEET

This project report entitled “**EFFECT OF VARIOUS GROWTH CONDITIONS ON PIGMENTATION OF *Burkholderia cepacia* UL1**” was prepared by CHOW SUET YAN and submitted as partial fulfilment of the requirements for the degree of Bachelor of Science (Hons) Biotechnology at Universiti Tunku Abdul Rahman.

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PERMISSION SHEET

It is hereby certified that **CHOW SUET YAN** (ID No. **12ADB07444**) has completed this final year project entitled “EFFECT OF VARIOUS GROWTH CONDITIONS ON PIGMENTATION OF *Burkholderia cepacia* UL1” under the supervision of Asst. Prof. Dr Kho Chiew Ling from the Department of Biological Science, Faculty of Science.

I hereby give permission to the University to upload the softcopy of my final year project in pdf format into the UTAR Institutional Repository, which may be made accessible to the UTAR community and public.

Yours truly,

(CHOW SUET YAN)

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LIST OF ABBREVIATIONS

AAS	Atomic Absorption Spectroscopy
BCSA	<i>Burkholderia cepacia</i> Selective Agar
LB	Luria-Bertani
MAC	MacConkey Agar
Mn	Manganese
Mn ²⁺	Manganese ion
MnSO ₄	Manganese (II) sulphate
NaHCO ₃	Sodium bicarbonate
NO ₃ ⁻	Nitrate ion
NO ₂ ⁻	Nitrite ion
SSM	Standard Succinate Medium