

COMPARISON OF ENDOGENOUS BENZENOID COMPOUND BETWEEN BUD
AND ANTHESIS STAGES IN *Jasminum sambac* FLOWERS

By

NORHAYATI BINTI OTHMAN @ ABDUL LATIFF

A PITA report submitted in partial fulfillment of
the requirement for the award of the degree of
Bachelor of Science (Biological Sciences)

DEPARTMENT OF BIOLOGICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITI MALAYSIA TERENGGANU

2011



**JABATAN SAINS BIOLOGI
FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU**

**SBB/SBD 4399B
PENGAKUAN DAN PENGESAHAN LAPORAN PITA**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: **COMPARISON OF ENDOGENOUS BENZENOID COMPOUND BETWEEN BUD AND ANTHESIS STAGES IN *Jasminum sambac* FLOWERS** oleh **NORHAYATI BINTI OTHMAN @ ABDUL LATIFF**, no. matrik: **UK 178632** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Biologi sebagai memenuhi sebahagian daripada keperluan memperoleh ijazah **SARJANA MUDA SAINS (SAINS BIOLOGI)**, Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

Disahkan oleh:

.....
Penyelia Utama

Nama:

Cop Rasmi:

Tarikh:

.....
Penyelia Kedua (jika ada)

Nama:

Cop Rasmi

Tarikh:

.....
Ketua Jabatan Sains Biologi

Nama:

Cop Rasmi:

DR. FARIDAH BINTI MOHAMMAD
Ketua Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

14 SEP 2011
Tarikh:

DECLARATION

I hereby declare that this PITA research report entitled COMPARISON OF ENDOGENOUS BENZENOID COMPOUND BETWEEN BUD AND ANTHESIS STAGES IN *Jasminum sambac* FLOWERS is the result of my own research except as cited in the references.

Signature : 
Name : NORHAYATI BINTI OTHMAN @ ABDUL LATIFF
Matric No : UK 17862
Date : 14 JUN 2011

ACKNOWLEDGEMENTS

I would like to thank all those who made this thesis possible and an enjoyable experience for me. First of all I wish to express my sincere gratitude to my supervisor, Cik Nur Fariza M. Shaipulah that involved in this project. I am grateful for their aid, guide and advices.

I also would like to appreciate Puan Ku Naiza Ku Nordin, En.Lukman Hakim Mohd Din, Puan Fatimah Ali@Abdullah, Puan Normaizianti Mohd Pilus, and En.Azahari Bin Muda from Jabatan Sains Marin, Fakulti Maritim Dan Sains Marin, UMT as well as lab assistants and staff for their assistance.

I am also grateful to my friends especially to Nor Shamira Bt Lokman, Chong Yik Ning, Lang Peng Yean, Evelyn Wong Chee Nee, coursemates and roommates for their help and opinions.

Finally, I would like to express my appreciation and gratitude for the love, support and motivations from the beginning until the finishing of this project and thesis.

Thank you.

PERBEZAAN SEBATIAN BENZENOID ENDOGEN ANTARA PERINGKAT PUCUK DAN ANTHESIS PADA BUNGA *Jasminum sambac*.

ABSTRAK

Komposisi bahan kimia dalam bau bunga yang menentukan pengeluaran bau bunga pada tumbuhan-tumbuhan biasanya didominasi oleh satu atau dua kelas bahan kimia contohnya sebatian benzenoid. Objektif kajian ini adalah untuk mengukur ciri-ciri pada struktur bunga dan mengesan kandungan sebatian benzenoid endogen yang wujud pada peringkat pucuk dan anthesis pada bunga *J.sambac*. Ukuran ciri-ciri struktur bunga di ambil, bunga di ekstrak dan pati minyak di analisis kandungannya menggunakan High Performance Liquid Chromatography (HPLC). Berdasarkan ciri-ciri bunga *J.sambac* yang diukur, ia menunjukkan pertambahan diameter bunga pada peringkat anthesis dan berdasarkan pemerhatian, organ pembiakan bunga tidak terdedah dari corong corolla bunga *J.sambac*. Pengesanan sebatian benzenoid endogen menunjukkan sebatian benzaldehyde predominan dikesan pada 5.0 minit penahanan masa yang mana kepekatannya adalah sedikit berbeza antara peringkat pucuk dan anthesis. Bukaan diameter bunga merangsang pengeluaran sebatian yang meruap manakala sebatian benzaldehyde predominan yang dikesan bergabung dengan sebatian lain untuk mengeluarkan bau bunga. Bau bunga yang terhasil daripada kandungan sebatian benzenoid endogen iaitu sebatian benzaldehyde predominan, berfungsi menarik ejen pendebungaan yang akan melakukan pendebungaan silang atau allogamy, yang akan menghasilkan kepelbagaian genetik pada populasi tumbuhan *J.sambac*.

**COMPARISON OF ENDOGENOUS BENZENOID COMPOUND BETWEEN
BUD AND ANTHESIS STAGES IN *Jasminum sambac* FLOWERS.**

ABSTRACT

Chemical composition of the floral scent determined the emission of floral scent in plants that usually dominated by one or two classes of chemicals such as benzenoid compound. Objectives of this study are to measure characteristics of flower structure and to identify the content of endogenous benzenoid compounds exist in the bud and anthesis stages of *J. sambac* flower. Measurements of characteristics of flower structure were carried out, the flowers were extracted and essential oils were analyzed using High Performance Liquid Chromatography (HPLC). Based on characteristics of *J.sambac* flowers were measured, it showed that anthesis stage have increase in diameter flower and according observation, reproductive organ of the *J.sambac* flowers not exposed from corolla tube of this flower. The identification of endogenous benzenoid compound showed the detection of predominant benzaldehyde compound at 5.0 minutes of retention time which is slightly different in concentrations in the bud and anthesis stages. Opening of flower diameter enhance emission of volatile compound while, benzaldehyde compound which detected combine with other compound to produce floral odour. Odour of flower produced from the content of endogenous benzenoid compounds which are predominant benzaldehyde, attracting pollinator who will conduct the cross-pollination or allogamy, thus yield the genetic diversity of plant populations of *J.sambac*.