

ESTABLISHMENT OF TISSUE CULTURE OF BITUMI
(*Hyalomma castaneiventris*)

SYOLIHAN ET MUHAMMAD KHIR

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ESTABLISHMENT OF TISSUE CULTURE OF
PITAYA (*Hylocereus costaricensis*)

By

Sholihah bt Muhammad Khir

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FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

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Disahkan oleh: / Verified by:

Penyelia Utama / Main Supervisor

Nama: **DR. AZIZ AHMAD**
Pensyarah

Cop Rasmi: Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu.

Tarikh: 30/4/2017

Penyelia Kedua / Co-Supervisor

Nama: **PROF. MADYA DR. AWANG SOH MAMAT**
Timbalan Dekan (Hal Ehwal Pelajar & Alumni)

Cop Rasmi: Fakulti Agroteknologi dan Sains Makanan
Universiti Malaysia Terengganu
21030 Kuala Terengganu.

Tarikh: 30/4/07

Ketua Jabatan Sains Biologi / Head, Department of Biological Sciences

Nama: **DR. AZIZ BIN AHMAD**
Ketua

Cop Rasmi: Jabatan Sains Biologi
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Tarikh: 30/4/2017

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LIST OF ABBREVIATIONS

%	-	Percentage
cm	-	Centimeter
mg	-	Miligram
L	-	Liter
°C	-	Degree centigrade
NaOH	-	sodium hydroxide
HCl	-	hydrochloride acid
PGR	-	Plant growth regulator
2ip	-	isopentyl adenine
Kin	-	Kinetin
Zea	-	Zeatin
TDZ	-	Thidiazuron
NAA	-	1-naphthaleneacetic acid
MS	-	media Murashige and Skoog
B5	-	media Gamborg <i>et al</i>

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ABSTRACT

Pitaya plants have been proven to have the medical importance, such as reduce the cholesterol level, acts as anticancer agent, and so on. To date, research have been done to increase the number of Pitaya plants for commercializing purposes. The objectives of this study were to establish the tissue culture protocol of Pitaya, to determine the best medium and also to determine the best concentration for shoot proliferations of Pitaya. Pitaya *Hylocereus costaricensis* cultured were successfully established on MS and B5 medium, from germinated seeds. The seeds were surface sterilized with 70% ethanol for 5 seconds followed by immersion in 3% Clorox and added with few drops of Tween 20 for 20 minutes. Seven days old of germinated seeds were subcultured on MS or B5 medium, with combination of auxin or cytokinins. The cytokinins used were 2ip, kinetin, TDZ and Zeatin, where as NAA was the only auxin used. The concentration of the phytohormones used were 0, 1, 3 and 5 mg/L, respectively. The best medium for shoot proliferation was MS added with combination of 3mg/L of Kinetin and 3mg/L of NAA, which was three shoots per explant. The callus were successfully induced on MS medium added with combination 5mg/L of 2ip and 1mg/L of NAA or B5 medium, containing combination of 5mg/L of Kin and 1mg/L of NAA. B5 was also the best medium for calli proliferations. In conclusion, Kinetin was the best hormone for shoot proliferations on MS and also the best to induce callus, in combination with NAA on B5 medium.

PENUBUHAN KULTUR TISU PITAYA

(*Hylocereus costaricensis*)

ABSTRAK

Pokok Pitaya telah dibuktikan mempunyai kepentingan perubatan, seperti mengurangkan tahap kolestrol, bertindak sebagai agen antikanser, dan sebagainya. Sehingga ke hari ini, kajian telah dijalankan untuk meningkatkan bilangan pokok Pitaya bagi tujuan komersial. Objektif kajian ini adalah untuk menubuhkan protokol tisu kultur Pitaya, menentukan medium yang sesuai dan menentukan kepekatan hormon yang terbaik bagi pertumbuhan pucuk Pitaya. Pitaya (*Hylocereus costaricensis*) kultur telah berjaya ditubuh pada medium MS dan B5 dengan menggunakan biji benih yang digerminasi. Biji benih telah disteril permukaan dengan 70% etanol untuk 5 saat, diikuti dengan rendaman dalam 3% Clorox yang ditambah beberapa titik Tween 20 untuk 20 minit. Biji benih yang digerminasi berusia 7 hari telah disubkultur pada medium MS atau B5, dengan kombinasi auksin dan sitokinin. Sitokinin yang telah diguna adalah 2ip, Kinetin TDZ dan Zeatin, manakala NAA adalah satu-satunya auksin yang diguna. Kepekatan fitohormon yang telah diguna adalah 0,1,3 dan 5 mg/L. media terbaik untuk pertumbuhan pucuk adalah MS, ditambah dengan 3mg/L Kinetin dan 3mg/L NAA, dengan tiga pucuk setiap eksplan. Kalus telah berjaya diransang pada medium MS, ditambah dengan gabungan 5mg/L 2ip digabung dan 1mg/L NAA, dan atau medium B5 gabungan 5mg/L Kin dan 1mg/L NAA. Medium B5 juga adalah yang terbaik bagi pertumbuhan kalus. Kesimpulannya, hormon Kinetin adalah terbaik bagi pertumbuhan pucuk pada MS dan juga terbaik untuk meransang kalus, dengan kombinasi NAA pada medium B5.