



## เอกสารอ้างอิง

### ภาษาไทย

- จารุวรรณ วิมล, " การแปลงรูปทางชีวภาพของโคเลสเตอรอลเป็น 1,4-แอนโดรสตาไดอิน-3,17-ไดโอน โดย Mycobacterium sp. BJ-157 " วิทยานิพนธ์ปริญญามหาบัณฑิต ภาควิชาจุลชีววิทยา บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2533
- จันทร์เพ็ญ เดชะอำไพ, " การผลิตกรด 6-อะมิโนเพนนิซิลานิกโดยใช้เซลล์ Escherichia coli ที่ถูกตรึง " วิทยานิพนธ์ปริญญามหาบัณฑิต ภาควิชาชีวเคมี บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2529
- ปัทมา ดาวรรณิณี, " การผลิตและการสกัดออร์โมนลอกกราบจากแคลลัสของต้นไข่ม้วน (Vitex glabrata R.Br.) " วิทยานิพนธ์ปริญญามหาบัณฑิต ภาควิชาเทคโนโลยีชีวภาพ บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2533
- แผนกเภสัชพฤกษศาสตร์และแผนกเภสัชเวท จุฬาลงกรณ์มหาวิทยาลัย, พฤกษศาสตร์จำแนกพวก, หน้า 128, 2521., พฤกษศาสตร์จำแนกพวกเล่ม 2, หน้า 207, 2521
- พรศิลป์ ผลพันธ์ิน, นพจํา อรัญยกานนท์, เปี่ยมศักดิ์ เมนะเศวต, นุศล โมณี และ สมภพ รุ่งสุภา, " ผลของออร์โมนเบตา-เอคโดสเตอโรนต่อการลอกกราบของกิ่งทะเลบางชนิด " บทคัดย่อการประชุมวิชาการเรื่องทรัพยากรสิ่งมีชีวิตทางน้ำครั้งที่ 2, จุฬาลงกรณ์มหาวิทยาลัย, 2530
- พัฒน์ัญญา เลขวัต, สันห์ ผนังชกุล, สมคิด เกษรสมบุญ, อภิชาติ สุขสำราญ และ สมเกียรติ ปิยะธีระธิตีวรกุล บทคัดย่อ "การประชุมวิชาการวิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย" ครั้งที่ 11, มหาวิทยาลัยเกษตรศาสตร์, กรุงเทพมหานคร, 2528
- พนา โลหะทรัพย์ทวี และ สันห์ ผนังชกุล, " การสังเคราะห์แอนโดสเตอโรนในเนื้อเยื่อเพาะเลี้ยงพืชไข่ม้วน (Vitex glabrata) " การประชุมวิชาการวิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย ครั้งที่ 15 , มหาวิทยาลัยเชียงใหม่, จังหวัดเชียงใหม่, 2532
- อุทัยพรรณ ประเสริฐสม, " การเพาะเลี้ยงเซลล์พืชไข่ม้วน (Vitex glabrata R.Br.) ในสภาพแขวนลอยเพื่อผลิตออร์โมนลอกกราบ " วิทยานิพนธ์ปริญญามหาบัณฑิต ภาควิชาเทคโนโลยีชีวภาพ บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย, 2533

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ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



ภาคผนวก

ศูนย์วิทยทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย



## ภาคผนวกที่ 1

## อาหารเพาะเลี้ยงเซลล์พืช Murashige and Skoog

<u>แมโครนิวเตรียนท์</u>	<u>มก./ลิตร</u>	<u>วิตามิน</u>	<u>มก./ลิตร</u>
$\text{NH}_4\text{NO}_3$	1650	myoinositol	100
$\text{KH}_2\text{PO}_4$	170	nicotinic acid	0.5
$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	370	aminoglycine	2.0
$\text{KNO}_3$	1900	pyridoxine-HCl	0.5
$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	440	thiamine-HCl	0.1
$\text{Na}_2\text{EDTA}$	37.25		
$\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$	27.75		

<u>ไมโครนิวเตรียนท์</u>	<u>มก./ลิตร</u>	<u>แหล่งคาร์บอนด์</u>	<u>กรัม/ลิตร</u>
KI	0.83		
$\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$	0.25	Sucrose	30.0
$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$	0.025		
$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$	0.025	ปรับ pH	5.6
$\text{H}_3\text{BO}_3$	6.2		
$\text{MnSO}_4 \cdot 4\text{H}_2\text{O}$	6.9	<u>อาหารแข็ง</u>	เติมผงวัน 0.7 %
$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	6.14		

## ภาคผนวกที่ 2

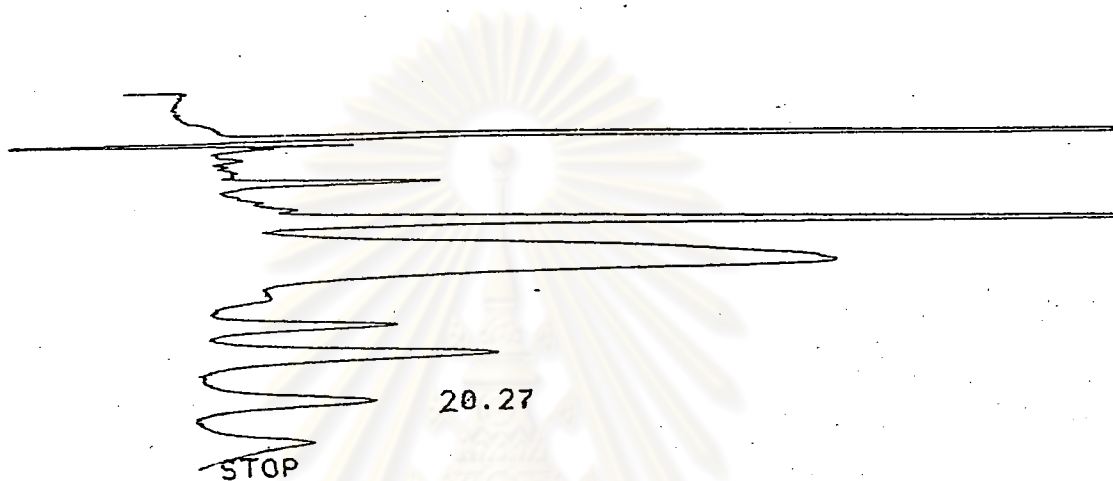
## อาหารเพาะเลี้ยงเซลล์พืชสูตร B-5

<u>แมโครนิวเตรียนท์</u>	<u>มก./ลิตร</u>	<u>วิตามิน</u>	<u>มก./ลิตร</u>
$\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$	150	myoinositol	100.0
$\text{NaH}_2\text{PO}_4$	150	nicotinic acid	1.0
$\text{KNO}_3$	2500	pyridoxine-HCL	1.0
$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	250	thiamine-HCL	10.0
$(\text{NH}_4)_2\text{SO}_4$	134		
NaFeEDTA	28		
<u>ไมโครนิวเตรียนท์</u>	<u>มก./ลิตร</u>	<u>แหล่งคาร์บอนด์</u>	<u>กรัม/ลิตร</u>
$\text{H}_3\text{BO}_3$	3.0	Sucrose	30
$\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$	0.025		
$\text{CuSO}_4$	0.025	ปรับ pH 5.6	
KI	0.075		
$\text{MnSO}_4 \cdot \text{H}_2\text{O}$	10.0	<u>อาหารแข็ง</u>	เติมผงวัน 0.7 %
$\text{Na}_2\text{MoO}_4 \cdot 2\text{H}_2\text{O}$	0.25		
$\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	2.0		

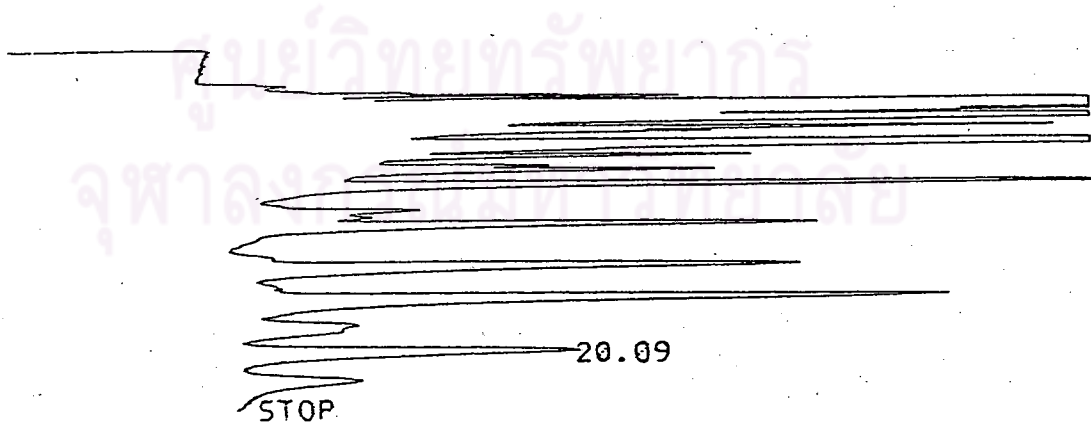
ศูนย์วิทยุทรัพยากร  
จุฬาลงกรณ์มหาวิทยาลัย

ภาคผนวกที่ 3

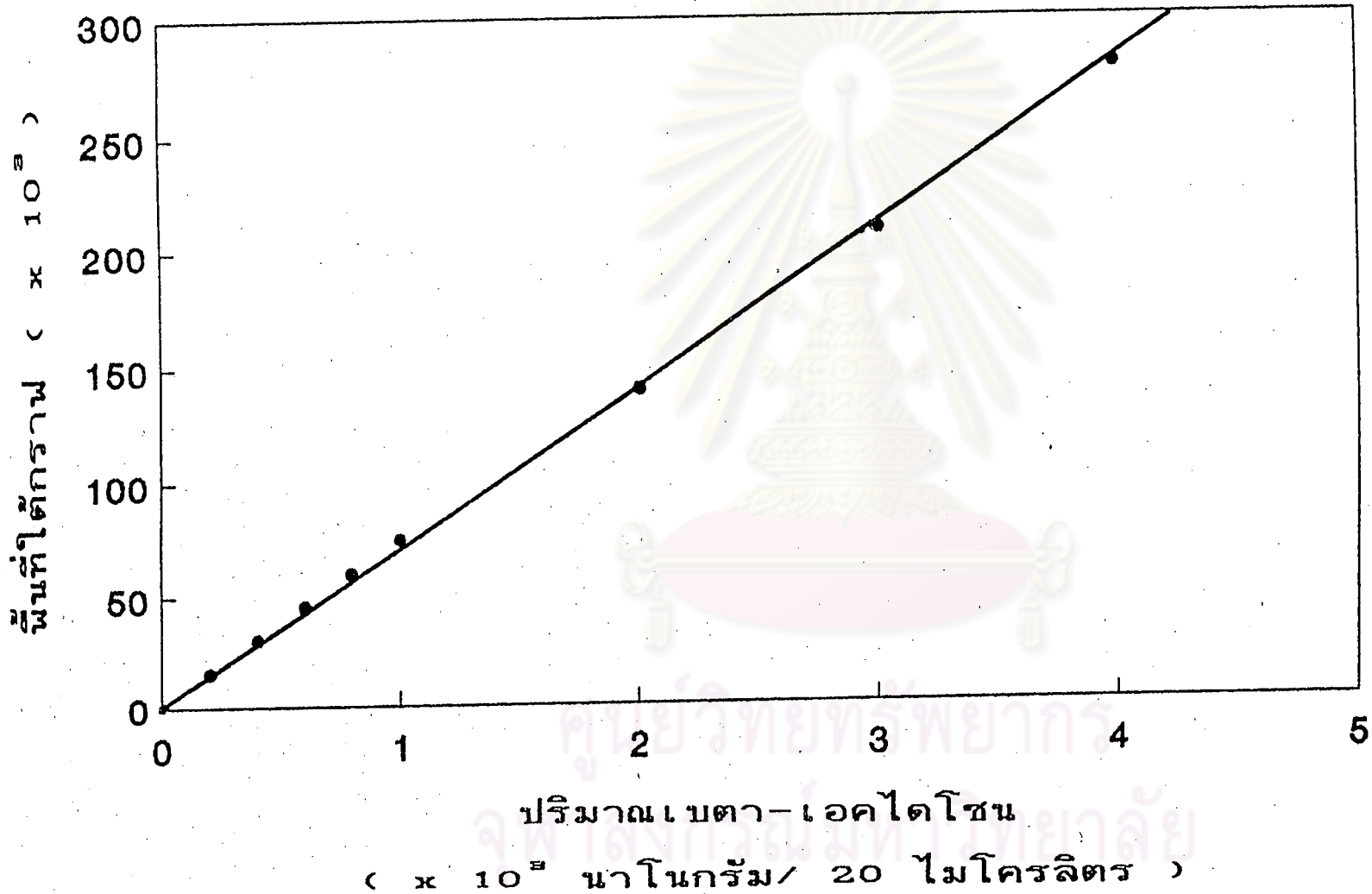
โครมาโตแกรมของการวิเคราะห์หาปริมาณเบตา-เอคโดโซน จากการเพาะเลี้ยงเซลล์  
พืชไข่เน่า (*Vitex glabrata* R.Br.)



ก. เซลล์แขวนลอยอิสระ



ข. เซลล์ตรึงในอัลจิเนต



กราฟมาตรฐานสำหรับหาปริมาณเบตา-เอคไดโซน



## ประวัติผู้เขียน

นาย พนา โลหะทรัพย์ทวี เกิดวันที่ 28 กันยายน พ.ศ. 2507 สำเร็จการศึกษา  
ปริญญาวิทยาศาสตรบัณฑิต ( เทคโนโลยีชีวภาพ ) จากคณะวิทยาศาสตร์ มหาวิทยาลัยมหิดล  
ในปีการศึกษา 2530 .



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จุฬาลงกรณ์มหาวิทยาลัย