

การเสื่อมสลายของเซลล์ประสาทเซนซอรีและเซลล์ประสาทมอเตอร์หลังตัดแอกซอนในหนูแรทโตเต็มวัยและ
การป้องกันโดยลูซิเมีย อินฮิบิทอรี แฟคเตอร์

นางสาว ลลิตภัทร ฉัตรตรงค์



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

สาขาวิชาชีววิทยา สหสาขาวิชาชีววิทยา

บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิทยาลัย

ปีการศึกษา 2543

ISBN 974-347-123-5

ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

THE DEGENERATION OF SENSORY AND MOTOR NEURONS AFTER AXOTOMY
IN YOUNG ADULT RAT AND PREVENTION BY LEUKEMIA INHIBITORY FACTOR

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A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Physiology
Inter-Departmental Program in Physiology
Graduate School
Chulalongkorn University
Academic Year 2000
ISBN 974-347-123-5

Thesis Title THE DEGENERATION OF SENSORY AND MOTOR NEURONS AFTER AXOTOMY IN YOUNG ADULT RAT AND PREVENTION BY LEUKEMIA INHIBITORY FACTOR.


By Miss Lalipat Chatdarong

Field of study Physiology

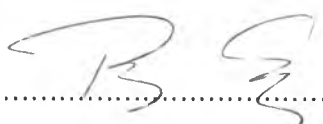
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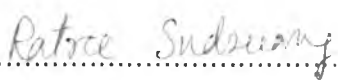
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น.ส.ลลิตภัทร ฉัตรตรงค์ : การเสื่อมสลายของเซลล์ประสาทเซนซอรีและเซลล์ประสาท
มอเตอร์หลังตัดแอกซอนในหนูแรทโตเต็มวัย และ การป้องกันโดยลูคีเมีย อินฮิบิทอรี
แฟคเตอร์. (THE DEGENERATION OF SENSORY AND MOTOR NEURONS AFTER
AXOTOMY IN YOUNG ADULT RAT AND PREVENTION BY LEUKEMIA INHIBITORY
FACTOR) อ. ที่ปรึกษา : ศ.ดร.ราตรี สุตทรวง, อ.ที่ปรึกษาร่วม : ผศ.ดร.วิระชัย สิงหนิยม
จำนวนหน้า 69 หน้า. ISBN 974-347-123-5.

ลูคีเมีย อินฮิบิทอรี แฟคเตอร์(LIF) เป็นไซโตคาย โพลีเปปไทด์ การศึกษาช่วงแรกได้มีการแสดง
ผลการใช้ LIF ว่าสามารถช่วยป้องกันการเกิดการตายแบบแอฟโพโตซิสในประสาทเซนซอรี และเซลล์
ประสาทมอเตอร์ในหนูแรทเพิ่งเกิด ซึ่งการศึกษาคั้งนี้มีจุดมุ่งหมายในการทำการทดลองในสัตว์ทดลอง
โตเต็มวัย เพื่อศึกษาการเสื่อมสลายของเซลล์ประสาทเซนซอรีและเซลล์ประสาทมอเตอร์เปรียบเทียบ
ระหว่างการตัดแอกซอนอย่างเดียวกัการตัดแอกซอนร่วมกับการผูก และ ดูผลของ LIF ในการช่วย
ชีวิตการตายของเซลล์ประสาททั้งสอง ซึ่งผลที่ได้พบว่าในหนูกลุ่มที่ตัดแอกซอนร่วมกับการผูก มีการ
ตายของเซลล์ประสาทเซนซอรีในระดับC7,C8 และ T1 ใกล้เคียงกับในหนูกลุ่มที่ตัดแอกซอนอย่างเดียว
ในส่วนของเซลล์ประสาทมอเตอร์พบว่าไม่มีความแตกต่างระหว่างหนู 2กลุ่ม ส่วนผลของการใช้ LIF ใน
การรักษา โดยทำการตัดเส้นประสาทของหนูแรทโตเต็มวัย และทำการรักษาโดยใช้เจลโฟมจุ่มด้วยLIF
และPBS หุ้มที่ปลายเส้นประสาททั้งสอง เปรียบเทียบผลระหว่าง กลุ่มควบคุมใช้ PBSกับกลุ่มที่รักษา
ด้วยLIF พบว่าหนูกลุ่มที่รักษาด้วย LIF มีการอยู่รอดของเซลล์มากกว่ากลุ่มที่ใช้ PBS ในทุกระดับ และ
พบว่า LIF สามารถช่วยเพิ่มให้มีการอยู่รอดของเซลล์ประสาท เซนซอรีอย่างมีนัยสำคัญ ในระดับT1
หลังรักษาได้ 1 สัปดาห์ , ระดับ C7 และ T1 หลังรักษาได้ 2 สัปดาห์ และ ระดับ C7 ถึง T1 หลัง
รักษาได้ 4 สัปดาห์ ในส่วนของเซลล์ประสาทมอเตอร์พบว่า LIFสามารถช่วยเพิ่มการอยู่รอดของเซลล์
อย่างมีนัยสำคัญ ในระดับC7 หลังรักษาได้ 1 สัปดาห์ จากผลการทดลองที่ได้ พบว่ามีการตายของ
เซลล์ประสาทมอเตอร์ในช่วงสัปดาห์แรกอย่างเดียว หลังจากตัดเส้นประสาท

ภาควิชา สรีรวิทยา
สาขาวิชา สรีรวิทยา
ปีการศึกษา 2543

ลายมือชื่อนิสิต.....
ลายมือชื่ออาจารย์ที่ปรึกษา.....
ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

4075241430 : MAJOR PHYSIOLOGY

KEY WORD: NEURAL DEGENERATION / NERVE AXOTOMY / LEUKEMIA INHIBITORY FACTOR / /

LALIPAT CHATDARONG : THESIS TITLE. (THE DEGENERATION OF SENSORY AND MOTOR NEURONS AFTER AXOTOMY IN YOUNG ADULT RAT AND PREVENTION BY LEUKEMIA INHIBITORY FACTOR) THESIS ADVISOR : PROFESSOR RATREE SUDSUANG, Ph.D., THESIS COADVISOR : ASSISTANT PROFESSOR WEERACHAI SINGHANIYOM, Ph.D., 69 pp. ISBN 974-347-123-5.

Leukemia inhibitory factor (LIF), a multifunction polypeptide cytokine, has been demonstrated to it prevent apoptosis of sensory and motor neurons in newborn rats. This study has investigated and compared the time course of sensory and motor neuron loss after axotomy only with axotomy with ligation. The study investigated whether LIF also supports the survival of axotomized sensory and motor neurons in adult rat. It was found that the loss cells in the DRG of axotomy with ligation group at the C7 ,C8 , and T1 levels were nearly the same as the loss cells in the DRG of axotomy only group. In motor neuron, there was no different between the axotomy only group and the axotomy with ligation group. The median and ulnar nerve of adult rats were unilateral transected and treated with either the phosphate buffer saline (PBS) or LIF. It was clear that the survival cell in LIF-treated group was higher than the PBS group at every levels. However , a significant differences were shown at the T1 level (1 week), C7 and T1 (2 weeks), and C7 to T1 (4 weeks)of the DRG , and C7 (1 week) of the motor neuron. The results demonstrated that the apoptosis of the motor neuron was found only within the first week after nerve axotomy.

Department PHYSIOLOGY

Field of study PHYSIOLOGY

Academic year 2000

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ACKNOWLEDGMENT



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I would like to express my sincere gratitude and appreciation to my advisor, Professor Dr. Ratre Sudsuang, Department of Physiology, Faculty of Medicine, Chulalongkorn University and my co-advisor, Assistant Professor Dr. Weerachai Singhaniyom, Faculty of Health Science, Srinakharinwirot University for their kindness, guidance and encouragement throughout the course of this study, and editing of this dissertation.

I am grateful to Professor Dr. Surindar Cheema and Mrs. Elizabeth Lopez, Department of Anatomy, Monash University for their valuable technique advice for laboratory work.

I am grateful to Assistant Professor Pongsak Kunluan, Faculty of Pharmaceutical Sciences, Chulalongkorn University for provision of facilities employed in this experiment.

I am grateful to Associate Professor Sukumal Chongthammakun, Department of Anatomy, Faculty of Science, Mahidol University for her kindness and advice during this experimental.

I would like to extend my sincere thanks to Miss Nualnong Wongtongkam, Faculty of Health Science, Srinakharinwirot University, Miss Siraporn Choy Sri staff member of the Department of Anatomy, Faculty of Medicine, Srinakharinwirot University, and Miss Thanomrat Watcharachaipong staff member of the Department of Microbiology, Faculty of Medicine, Srinakharinwirot University for their help and mental support.

Finally, I wish to express my appreciation and grateful to my father, my mother and my sister, for their love, understanding and encouragement and support throughout my study. I am also indebted to all experiment animals for their sacrifice, which make this study possible.

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LIST OF ABBREVIATION

DRG	Dorsal root ganglia
C7	Seventh cervical segment
C8	Eighth cervical segment
T1	First thoracic segment
NGF	Nerve growth factor
NT	Neurotrophin
P75NGFR	P75 Neurotrophic factor receptor
TRK	Tyrosine kinase
LIF	Leukemia inhibitory factor
LIFR	Leukemia inhibitory factor receptor
CNTF	Ciliary neurotrophic factor
JAK	Janus kinases
g	gram
°C	Degree Celsius
ip	intraperitoneal
µm	Micrometer
µl	Microliter
µg	Microgram
ml	Milliliter
mm	Millimeter
MTPBS	Mounted tonicity phosphate buffer saline
PBS	Phosphate buffer saline