

การศึกษาวิถีประสาทขาออกจากบริเวณที่เพิ่มความดันเลือดของฟอสติเจียสนิวเคลียส  
ในกระดาดโดยวิธีขนส่งตามเส้นประสาทโดยใช้ไบโอซัยติน



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TRACTNG OF EFFERENT FIBERS FROM THE FASTIGIAL  
PRESSOR AREA IN TREE SHREWS (*Tupaia glis*)  
BY THE METHOD OF ANTEROGRADE AXONAL  
TRANSPORT OF BIOCYTIN

**Miss Maitta Phoglin**

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พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว



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การวิจัยครั้งนี้มีจุดมุ่งหมายเพื่อศึกษาวิถีประสาทขาออกจากบริเวณที่เพิ่มความดันเลือดของ  
fastigial nucleus ในกระแตที่ทำให้สลบ

ผลการวิจัยจากการกระตุ้น fastigial nucleus ด้วยกระแสไฟฟ้าและฉีดไบโอซัยตินที่  
บริเวณส่วนหน้าและส่วนกลางของนิวเคลียสซึ่งเป็นบริเวณที่เกี่ยวข้องกับการเพิ่มความดันเลือดพบว่าวิถี  
ประสาทไข้อย่างประสาทไขสันหลังโดยตรงทาง ventral spinocerebellar tract ผ่านด้านหลัง  
ของ brachium conjunctivum มาทางขอบด้านในของ brachium pontis และขอบด้านนอก  
ของ spinal tract of trigeminal nerve จากนั้นเมื่อถึงระดับ superior olivary  
nucleus การกระจายของ fibers จะแยกเป็น 2 กลุ่ม กลุ่มด้านบนพบที่ brachium conjunc-  
tivum ผ่านมาทางขอบด้านในของ brachium pontis สำหรับกลุ่มด้านล่างพบที่ขอบด้านนอกของ  
spinal tract of trigeminal nerve ขยายออกไปที่ขอบด้านนอกของ superior olivary  
nucleus จากนั้นทั้งสองกลุ่มของ fibers จะมารวมกันที่ dorsal spinocerebellar tract  
ที่ระดับ dorsal vagal nuclei ซึ่งผลนี้ไม่พบเมื่อฉีดไบโอซัยตินที่บริเวณด้านท้ายของนิวเคลียสซึ่ง  
เป็นบริเวณที่ไม่เกี่ยวข้องกับความดันเลือด นอกจากนี้ที่ส่วนหน้าและส่วนกลางของนิวเคลียสยังมีวิถี -  
ประสาทไข้อย่าง vestibular nucleus , cuneate nucleus , tractus solitarius  
nucleus ซึ่งผลนี้พบเหมือนกับการฉีดไบโอซัยตินในส่วนท้ายของ fastigial nucleus

จากผลการวิจัยนี้อาจสรุปได้ว่า มีการติดต่อโดยตรงจาก fastigial nucleus ไปยัง  
ประสาทไขสันหลังซึ่งควบคุมเกี่ยวกับหน้าที่การทำงานของระบบหัวใจและหลอดเลือด

ภาควิชา ..... คณะวิทยาศาสตร์ศึกษา .....  
สาขาวิชา ..... สรีรวิทยา .....  
ปีการศึกษา ..... ๒๕๓๖ .....

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

## C346900 : MAJOR PHYSIOLOGY

KEY WORD : BIOCYTIN / FASTIGIAL PRESSOR AREA / EFFERENT FIBERS/ Tupaia glis

MAITTA PHOGLIN : TRACING OF EFFERENT FIBERS FROM THE FASTIGIAL PRESSOR AREA IN TREE-SHREWS (Tupaia glis) BY THE METHOD OF ANTEROGRADE AXONAL TRANSPORT OF BIOCYTIN

THESIS ADVISOR : ASSO.PROF.Dr.RATREE SUDSUANG AND ASSIST. PROF.Dr. WEERACHAI SINGHANIYOM , 115 pp.ISBN 974-583-922-1

Simultaneous electrical stimulations and injections of biocytin through glass micropipette into specific localized fastigial pressor areas in the rostral and middle part of the fastigial nucleus (FN) are performed in common tree shrews (Tupaia glis). Injections are also performed in non fastigial pressor area in the caudal part of the FN. Injections of biocytin achieved through pressure injection apparatus at a small volume (30 picolitres). After 12-16 hours survival time, brains are vibratome sectioned and processed for biocytin localization. Evidences obtained from this study can be concluded that the fastigial pressor areas in the rostral and middle parts of the FN project bilateral in discrete bundles presumably to spinal cord which is not shown in the caudal injections. It was found that long bundles fibers are observed curving in a dorsoventral direction from the brachium conjunctivum to the spinal tract of trigeminal nerve. At the caudal level of superior olivary nucleus the bundles were splitted into two separate bundles. The upper bundle lie just dorsal to the brachium conjunctivum and run ventrolaterally along the medial dorsal to the brachium pontis , the lower one stretch along the lateral boundary of spinal tract of trigeminal nerve extending to the lateral boundary of the superior olivary nucleus. At the level of dorsal vagal nuclei , continuous labelled fiber tract are clearly observed in the dorsal spinocerebellar tract.

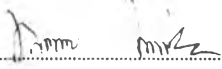
Terminal accumulations in vestibular nuclei , nucleus of the tractus solitarius , lateral cuneate nucleus and cuneate nucleus are corresponded in both the fastigial pressor areas and non fastigial perssor area.

These evidences suggest the direct connection from the fastigial nucleus to spinal cord which control the cardiovascular function.

ภาควิชา..... สหสาขาวิชาวิทยาศาสตร์สุขภาพ

สาขาวิชา..... สหสาขาวิชา

ปีการศึกษา..... ๒๕๖๕

ลายมือชื่อนิสิต..... 

ลายมือชื่ออาจารย์ที่ปรึกษา..... 

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม..... 



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## ABBREVIATION

A	=	ampere
ABP	=	arterial blood pressure
BC	=	brachium conjunctivum
BSA-HRP	=	biotinylated streptavidine-horseradish peroxidase
cFN	=	caudal part of fastigial nucleus
CN	=	cuneate nucleus
CNL	=	lateral cuneate nucleus
CSN	=	carotid sinus nerve
C VII	=	the seventh cranial nerve
DAB	=	3, 3 diaminobenzidine
DC	=	direct current
DP	=	diastolic pressure
DV	=	dorsal vagal nuclei
FDR	=	fastigial depressor response
Fig	=	figure
FN	=	fastigial nucleus
FPR	=	fastigial pressor response
FRG	=	nucleus reticularis magnocellularis
FRP	=	Pontine reticular formation
FRS	=	nucleus reticularis parvocellularis
HR	=	heart rate
HRP	=	horseradish peroxidase
Hz	=	hertz
ICP	=	inferior cerebellar peduncle
IML	=	intermediolateral
JRB	=	juxtarestiform body
kg	=	kilogram

K $\Omega$	=	kilo-ohms
LM	=	lemniscus medialis
M	=	molar
MAP	=	mean arterial pressure
M $\Omega$	=	mega-ohms
mA	=	miliampare
mFN	=	medial part of fastigial nucleus
mg	=	miligram
ml	=	millilitre
mm	=	milimetre
mmHg	=	milimetre of mercury
ms	=	milisecond
N	=	number
NCD	=	nucleus cochlearis dorsalis
NCV	=	nucleus cochlearis ventralis
NH	=	hypoglossal nuclei
nmol	=	nanomole
NP V	=	nucleus principalis nerve trigemini
NRG	=	nucleus reticularis gigantocellularis
NRT	=	nucleus reticularis tegmenti ponti
NS V	=	nucleus tractus spinalis nerve trigemini
NTS	=	nucleus of tractus solitarius
OI	=	inferior olivary nucleus
OS	=	superior olivary nucleus
PB	=	phosphate buffer
PBS	=	phosphate buffer in saline
PGI	=	paragigantocellular reticular nucleus
pl	=	picolitre
PRN	=	paramedian reticular nucleus
psi	=	pounds per square inch

PY	=	tractus paramedialis
RB	=	restiform body
RL	=	lateral reticular nucleus
rVL	=	rostral ventrolateral reticular nucleus
rVLM	=	rostral ventrolateral medulla
rFN	=	rostral part of fastigial nucleus
s	=	second
SD	=	standard deviation
SP	=	systolic pressure
TS V	=	spinal tract of trigeminal nerve
TSC	=	ventral spinocerebellar tract
TSD	=	dorsal spinocerebellar tract
UF	=	uncinate fasciculus
VI	=	Inferior vestibular nucleus
VL	=	lateral vestibular nucleus
VM	=	medial vestibular nucleus
VS	=	superior vestibular nucleus
W.ant.rFN	=	white matter area anterior to rostral pole of fastigial nucleus
WGA-HRP	=	wheat germ agglutinin-horseradish peroxidase
°C	=	degree celsius
µm	=	micrometre