

Title	Determination of acetylcholine release in the striatum of anesthetized rats using in vivo microdialysis and a radioimmunoassay
Sub Title	
Author	川島, 紘一郎(Kawashima, Koichiro) 早川, 亨(Hayakawa, Toru) 鹿島, 裕子(Kashima, Yuko) 鈴木, 岳之(Suzuki, Takeshi) 藤本, 和子(Fujimoto, Kazuko) 大畑, 尚代(Ohata, Hisayo)
Publisher	共立薬科大学
Publication year	1991
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.36 (1991. ) ,p.50- 50
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	<a href="https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000036-0050">https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000036-0050</a>

慶應義塾大学学術情報リポジトリ(KOARA)に掲載されているコンテンツの著作権は、それぞれの著作者、学会または出版社/発行者に帰属し、その権利は著作権法によって保護されています。引用にあたっては、著作権法を遵守してご利用ください。

The copyrights of content available on the Keio Associated Repository of Academic resources (KOARA) belong to the respective authors, academic societies, or publishers/issuers, and these rights are protected by the Japanese Copyright Act. When quoting the content, please follow the Japanese copyright act.

## **Determination of Acetylcholine Release in the Striatum of Anesthetized Rats Using In Vivo Microdialysis and a Radioimmunoassay\***

Koichiro KAWASHIMA, Toru HAYAKAWA, Yuko KASHIMA, Takeshi SUZUKI  
Kazuko FUJIMOTO and Hisayo OOHATA

川島紘一郎, 早川 亨, 鹿島裕子, 鈴木岳之, 藤本和子, 大畑尚代,

A vertical-type in vivo microdialysis probe and a sensitive, specific radioimmunoassay (RIA) were used to study the mechanism of acetylcholine (ACh) release in the striatum of anesthetized rats. Without the use of physostigmine, a cholinesterase inhibitor, our RIA could still detect the amount of ACh present in the perfusate ( $5.6 \pm 0.6$  fmol/min,  $n=16$ ).

Tetrodotoxin ( $1 \mu M$ ) produced a significant decrease in the amount of ACh collected in the perfusate, suggesting that basal ACh determined under the present experimental conditions was related to cholinergic neural activity. Atropine ( $0.1-1 \mu M$ ) applied topically via the dialysis probe did not affect the amount of ACh recovered in the perfusate in the absence of physostigmine. Addition of physostigmine ( $10 \mu M$ ) to the perfusion fluid produced about a 100-fold increase in the amount of ACh collected. In the presence of physostigmine, topical administration of atropine and pirenzepine ( $0.01-1 \mu M$ ) through a dialysis probe produced a further three- to fourfold increase in ACh output, whereas a slight increase was produced by AF-DX 116 at the highest concentration ( $1 \mu M$ ). These results indicate that presynaptic modulation of ACh release in the striatum does not occur under basal conditions, and that presynaptic  $M_1$  muscarinic receptors are involved in the modulation of ACh release when the ACh concentration is raised under certain conditions.

---

\* 本報告は *J. Neurochem.* 57, 882—887 (1991) に発表.