

## Contents

## ANALGESICS

- Spinal *Kappa* Receptor-Mediated Analgesia of E-2078, a Systemically Active Dynorphin Analog, in Mice Takahiro Nakazawa, Yoshiaki Furuya, Takeru Kaneko and Kiyomi Yamatsu 76

## AUTONOMIC PHARMACOLOGY

- Electrophysiological Studies on the Interaction of 5-Hydroxytryptamine with Sympathetic Transmission in the Guinea Pig Inferior Mesenteric Artery and Ganglion Alan G. Meehan and David L. Kreulen 82
- Potassium-Induced Contraction in the Lamb Proximal Urethra: Involvement of Norepinephrine and Different Calcium Entry Pathways A. García-Pascual, G. Costa, M. Isla, E. Jimenez and A. Garcia-Sacristán 127

## BEHAVIORAL PHARMACOLOGY

- Interactions between the Discriminative Stimulus Effects of *Mu* and *Kappa* Opioid Agonists in the Squirrel Monkey S. Stevens Negus, Mitchell J. Picker and Linda A. Dykstra 149

## CARDIOVASCULAR PHARMACOLOGY

- Inhibition of Endothelium-Dependent Relaxations by Phorbol Myristate Acetate in Canine Coronary Arteries: Role of a Pertussis Toxin-Sensitive G-Protein Nicholas A. Flavahan, Hiroaki Shimokawa and Paul M. Vanhoutte 50
- Characterization of LY233569 on 5-Lipoxygenase and Reperfusion Injury of Ischemic Myocardium Richard A. Hahn, Brian R. MacDonald, Paul J. Simpson, Lillian Wang, Richard D. Townner, Peter P. K. Ho, R. Michael Goodwin, Alan P. Breaux, Tulio Suarez and Edward D. Mihelich 94
- Regional and Systemic Hemodynamic Effects of Parathyroid Hormone-Related Protein: Preservation of Cardiac Function and Coronary and Renal Flow with Reduced Blood Pressure Alex Roca-Cusachs, Donald J. DiPette and G. Allen Nickols 110
- Characterization of Serotonin Receptors in Isolated Rat Intramyocardial Coronary Artery Fong M. Lai, Tarak Tanikella and Peter Cervoni 164
- A Comparison of the Hemodynamic Effects of Endothelin-1 and Sarafotoxin S6b in Conscious Rats Song-Ping Han, Angelo J. Trapani, Kam F. Fok, Thomas C. Westfall and Mark M. Knuepfer 183
- 15-Lipoxygenase Metabolites of Arachidonic Acid Evoke Contractions and Relaxations in Isolated Canine Arteries: Role of Thromboxane Receptors, Endothelial Cells and Cyclooxygenase Mark J. Van Diest, Tony J. Verbeuren and Arnold G. Herman 194
- Chiral Recognition of Pinacidil and its 3-Pyridyl Isomer by Canine Cardiac and Smooth Muscle: Antagonism by Sulfonylureas Mitchell I. Steinberg, Sally A. Wiest, Karen M. Zimmerman, Phillip J. Ertel, Kerry G. Bemis and David W. Robertson 222
- Modifications of Cardiac Contractility by Redox Cycling, Alkylating and Mixed Redox Cycling/Alkylating Quinones Maura Floreani and Francesca Carpenedo 243
- Differential Hemodynamic Effects and Tolerance Properties of Nitroglycerin and an *S*-Nitrosothiol in Experimental Heart Failure John Anthony Bauer and Ho-Leung Fung 249
- Structurally Novel Antihypertensive Compound, McN-5691, is a Calcium Channel Blocker In Vascular Smooth Muscle Stephen F. Flaim, Marie M. Gleason, Anders Hedberg, Richard P. Shank, John R. McCullough, Alan Gill, Bruce P. Damiano, Melvin D. Brannan and John R. Carson 279

<b>Serotonin-Induced Na<sup>+</sup>/K<sup>+</sup> Pump Stimulation in Vascular Smooth Muscle Cells. Evidence for Coupling to Multiple Receptor Mechanisms</b>	Stephen S. Navran, Gregory Allain, Henry F. Garcia, Julius C. Allen and Charles L. Seidel	297
<b>UK-68,798: A Novel, Potent and Highly Selective Class III Antiarrhythmic Agent Which Blocks Potassium Channels in Cardiac Cells</b>	M. Gwilt, J. E. Arrowsmith, K. J. Blackburn, R. A. Burges, P. E. Cross, H. W. Dalrymple and A. J. Higgins	318
<b>Antiarrhythmic Efficacy of a New Class III Agent, UK-68,798, During Chronic Myocardial Infarction: Evaluation Using Three-Dimensional Mapping</b>	Giulio Zuanetti and Peter B. Corr	325
<b>Effects of Nitroglycerin on ATP-Induced Ca<sup>++</sup>-Mobilization, Ca<sup>++</sup>-Activated K Channels and Contraction of Cultured Smooth Muscle Cells of Porcine Coronary Artery</b>	Kazuya Fujino, Shuichiro Nakaya, Tetsuzo Wakatsuki, Yukiko Miyoshi, Yutaka Nakaya, Hiroyoshi Mori and Isao Inoue	371
<b>CELLULAR AND MOLECULAR PHARMACOLOGY</b>		
<b>Formation of Endothelium-Derived Relaxing Factor in Porcine Kidney Epithelial LLC-PK<sub>1</sub> Cells: An Intra- and Intercellular Messenger for Activation of Soluble Guanylate Cyclase</b>	Kunio Ishii, Bing Chang, James F. Kerwin, Jr., Frank L. Wagenaar, Zei-Jing Huang and Ferid Murad	38
<b>Protein Kinase C Translocation in Rat Stomach Fundus: Effects of Serotonin, Carbamylcholine and Phorbol Dibutyrate</b>	Roberta J. Secrest, Virginia L. Lucaites, Laurane G. Mendelsohn and Marlene L. Cohen	103
<b>Concentration-Dependence of Acetylcholine-Induced Changes in Calcium and Tension in Swine Trachealis</b>	Char-Chang Shieh, Marcy F. Petrini, Terry M. Dwyer and Jerry M. Farley	141
<b>Voltage Clamp Analysis Reveals Multiple Populations of Quanta Released at Neuromuscular Junctions of Rats Treated with 2,4-Dithiobiuret</b>	John M. Spitsbergen and William D. Atchison	159
<b>Disruption of Brain Mitochondrial Calcium Sequestration by Methylmercury</b>	Paul C. Levesque and William D. Atchison	236
<b>High Affinity [<sup>3</sup>H]Glibenclamide Binding Sites in Rat Neuronal and Cardiac Tissue: Localization and Developmental Characteristics</b>	Jerry A. Miller, Nelson L. Velayo, Richard C. Dage and David Rampe	358
<b>DEVELOPMENTAL PHARMACOLOGY</b>		
<b>Sexually Dimorphic Influence of Prenatal Exposure to Diazepam on Behavioral Responses to Environmental Challenge and on <math>\gamma</math>-Aminobutyric Acid (GABA)-Stimulated Chloride Uptake in the Brain</b>	Carol K. Kellogg, Renee J. Primus and Daniel Bitran	259
<b>DRUG METABOLISM AND DISPOSITION</b>		
<b>Insight into Interstitial Drug Disposition: Lymph Concentrations of Lidocaine, Procainamide and Meperidine in the Hindquarters of Unanesthetized and Anesthetized Sheep</b>	Yi Fei Huang, Richard N. Upton, William B. Runciman and Laurence E. Mather	69
<b>Tissue Distribution, Excretion and Hepatic Biotransformation of Microcystin-LR in Mice</b>	Nancy A. Robinson, Judith G. Pace, Charles F. Matson, George A. Miura and Wade B. Lawrence	176
<b>ENDOCRINE PHARMACOLOGY</b>		
<b>Quinidine Inhibits Prolactin Secretion Induced by Thyrotropin-Releasing Hormone, High Medium Potassium or Hyposmolarity in GH4C1 Cells</b>	Xiangbing Wang, Noriyuki Sato, Monte A. Greer, Susan E. Greer and Staci McAdams	135
<b>Monoamine Mediation of Cocaine-Induced Hypothalamo-Pituitary-Adrenal Activation</b>	Beth Borowsky and Cynthia M. Kuhn	204
<b><i>In Vitro</i> Pharmacological Profile of a Novel Structural Class of Oxytocin Antagonists</b>	D. J. Pettibone, B. V. Clineschmidt, E. V. Lis, D. R. Reiss, J. A. Totaro, C. J. Woyden, M. G. Bock, R. M. Freidinger, R. D. Tung, D. F. Veber, P. D. Williams and R. I. Lowensohn	304

## GASTROINTESTINAL PHARMACOLOGY

- Low Dose Verapamil and Nitroprusside Distinguish Tonic from Cholinergic-Induced Contractions in *in Vivo* Feline Lower Esophageal Sphincter David A. Katzka, James C. Reynolds, A. Daniel King and Sidney Cohen 189
- Differential Effects of Reactive Oxygen Metabolites on Neurally Stimulated and Nonstimulated Guinea Pig Ileum Chafiq Moumami, Gary W. Gullikson, Matthew B. Grisham and Timothy S. Gaginella 266
- Effects of 5-Hydroxytryptamine 3 Receptor Antagonists on Gastrointestinal Motor Activity in Conscious Dogs Naoyuki Yoshida, Akiyoshi Mizumoto, Yuji Iwanaga and Zen Itoh 272

## IMMUNOPHARMACOLOGY

- Cocaine-Mediated Suppression of Superoxide Production by Human Peripheral Blood Mononuclear Cells Chun C. Chao, Thomas W. Molitor, Genya Gekker, Michael P. Murtaugh and Phillip K. Peterson 255

## NEUROPHARMACOLOGY

- Noncontractile Acetylcholine Receptor-Operated Ca<sup>++</sup> Mobilization: Suppression of Activation by Open Channel Blockers and Acceleration of Desensitization by Closed Channel Blockers in Mouse Diaphragm Muscle Masayasu Kimura, Ikuko Kimura, Takashi Kondoh and Hiroshi Tsuneki 18
- Enhancing Effect by Nicotinic Acetylcholine Receptor Channel Blockers, Including  $\beta$ -Eudesmol, on Succinylcholine-Induced Inhibition of Twitch Tension and Intracellular Ca<sup>++</sup> in Mouse Diaphragm Muscle Ikuko Kimura, Hiroshi Tsuneki, Takashi Kondoh and Masayasu Kimura 24
- Evidence that Two Stereochemically Different *Alpha*-2 Adrenoceptors Modulate Norepinephrine Release in Rat Cerebral Cortex L. G. Harsing, Jr. and E. S. Vizi 44
- Role of Adenosine Receptors in Caffeine Tolerance Stephen G. Holtzman, Saakwa Mante and Kenneth P. Minneman 62
- $\gamma$ -Aminobutyric Acid (GABA) Stimulates Somatostatin Release Following Activation of a GABA Uptake Carrier Located on Somatostatin Nerve Endings of Rat Cerebral Cortex Maurizio Raiteri, Giambattista Bonanno, Ernesto Fedele, Giovanni Fontana and Anita Gemignani 88
- Calcium Antagonist Effects on Low-Threshold (T-Type) Calcium Current in Rat Isolated Hippocampal CA1 Pyramidal Neurons K. Takahashi and N. Akaike 169
- 5-HT<sub>2</sub> Antagonists Stereoselectively Prevent the Neurotoxicity of 3,4-Methylenedioxymethamphetamine by Blocking the Acute Stimulation of Dopamine Synthesis: Reversal by L-DOPA Christopher J. Schmidt, Vicki L. Taylor, Gina M. Abbate and Thaddeus R. Nieduzak 230
- Opioid-Mediated Facilitation of Long-Term Potentiation at the Lateral Perforant Path-Dentate Granule Cell Synapse Cui-Wei Xie and Darrell V. Lewis 289
- Serotonergic Modulation of the Release of Endogenous Norepinephrine from Rat Hypothalamic Slices Patrizio Blandina, Joseph Goldfarb, Janice Walcott and Jack Peter Green 341
- Differential Effects of Repeated Treatment with Haloperidol and Clozapine on Dopamine Release and Metabolism in the Striatum and the Nucleus Accumbens Junji Ichikawa and Herbert Y. Meltzer 348
- Carbon Monoxide (Co)-Induced Delayed Amnesia, Delayed Neuronal Death and Change in Acetylcholine Concentration in Mice Toshitaka Nabeshima, Akira Katoh, Hirohisa Ishimaru, Yukio Yoneda, Kiyokazu Ogita, Kenshi Murase, Hiroshi Ohtsuka, Kimiko Inari, Taneo Fukuta and Tsutomu Kameyama 378
- Developmental Time Course and Ionic Dependence of Kainate-Mediated Toxicity in Rat Cerebellar Granule Cell Cultures Koki Kato, Pamela S. Puttfarcken, W. Ernest Lyons and Joseph T. Coyle 402

## PHARMACOLOGY OF SUBSTANCE ABUSE

- Behavioral and Neurochemical Interactions between Cocaine and Buprenorphine: Implications for the Pharmacotherapy of Cocaine Abuse Erin E. Brown, Janet M. Finlay, James T. F. Wong, Geert Damsma and Hans C. Fibiger 119

<b>Pharmacodynamic and Pharmacokinetic Actions of Ketocyclazocine Enantiomers in the Dog: Absence of <i>Sigma</i>- or Phencyclidine-Like Activity</b>	D. Bruce Vaupel and Edward J. Cone	211
<b>PROSTAGLANDINS AND LEUKOTRIENES</b>		
<b>Renal and Femoral Vascular Responses to Endothelin-1 in Dogs: Role of Prostaglandins</b>	Katsuyuki Miura, Tokihito Yukimura, Yutaka Yamashita, Tomoji Shimmen, Michiaki Okumura, Shinya Yamanaka, Masahito Imanishi and Kenjiro Yamamoto	11
<b>Persistent Effects of Interleukin-1 on Smooth Muscle Preparations from Adrenalectomized Rats: Implications for Increased Phospholipase-A<sub>2</sub> Activity <i>via</i> Stimulation of 5-Lipoxygenase</b>	Kenneth G. Mugridge, Mauro Perretti, Cristina Becherucci and Luca Parente	29
<b>RENAL PHARMACOLOGY</b>		
<b>DMPS as a Rescue Agent for the Nephropathy Induced by Mercuric Chloride</b>	Rudolfs K. Zalups, Robert M. Gelein and Elsa Cernichiaro	1
<b>Caffeine Potentiates the Renin Response to Diazoxide in Man. Evidence for a Regulatory Role of Endogenous Adenosine</b>	Nancy J. Brown, James Porter, Diane Ryder and Robert A. Branch	56
<b>The Role of Phosphoinositide Turnover in Mediating the Biphasic Effect of Angiotensin II on Renal Tubular Transport</b>	Tong Wang and Yun Lai Chan	309
<b>Vasopressin Antidiuretic Agonist and Antagonist Activity in Dogs: Structural and Stereochemical Relationship Between Bridge and Carboxyl Terminus</b>	Christine R. Albrightson-Winslow, Bridget Brickson, David P. Brooks, William M. Bryan, Nancy Caldwell, Lewis B. Kinter, Michael L. Moore, Ponnal Nambi, Frans L. Stassen and William F. Huffman	335
<b>Protective Behavior of Captopril on Hg<sup>2+</sup>-Induced Toxicity on Kidney Mitochondria. <i>In Vivo</i> and <i>In Vitro</i> Experiments</b>	Edmundo Chávez, Cecilia Zazueta, Alvaro Osornio, José A. Holguín and María Elena Miranda	385
<b>TOXICOLOGY</b>		
<b>BMY 30047: A Novel Topically Active Retinoid with Low Local and Systemic Toxicity</b>	X. Nair, J. Quigley, K. M. Tramosch, F. I. Carroll, A. H. Lewin and I. Kiss	365
<b>Metabolism and Cytotoxicity of Naphthalene Oxide in the Isolated Perfused Mouse Lung</b>	Sarathchandra Kanekal, Charles Plopper, Dexter Morin and Alan Buckpitt	391
<b>An Antibody to Neutrophils Attenuates <math>\alpha</math>-Naphthylisothiocyanate-Induced Liver Injury</b>	Lawrence J. Dahm, A. Eric Schultze and Robert A. Roth	412