

# The Journal of PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS

VOLUME 273  
JUNE 1995  
NUMBER 3

## Contents

### ANALGESICS

- Opioid Tolerance in Human Placenta Due to *In Vitro* Methadone Administration** Bojana Cemerikic, Rahayla Zamah and Mahmoud S. Ahmed 987
- Effect of Intracerebroventricular  $\beta$ -Funaltrexamine on  $\mu$  Opioid Receptors in the Rat Brain: Consideration of Binding Condition** Lee-Yuan Liu-Chen, Hui-Hua Yang, Shuixing Li and Jill U. Adams 1047
- Spinal Nonadrenergic Imidazoline Receptors Do Not Mediate the Antinociceptive Action of Intrathecal Clonidine in the Rat** Philip J. Monroe, Deborah L. Smith, H. Renee Kirk and David J. Smith 1057
- Evaluation of Cannabinoid Receptor Binding and *in Vivo* Activities for Anandamide Analogs** Irma B. Adams, William Ryan, Michael Singer, Brian F. Thomas, David R. Compton, Raj K. Razdan and Billy R. Martin 1172
- [<sup>3</sup>H]WIN 35,428 ([<sup>3</sup>H]CFT) Binds to Multiple Charge-States of the Solubilized Dopamine Transporter in Primate Striatum** Lawrence M. Gracz and Bertha K. Madras 1224
- Characterization of Anandamide- and Fluoroanandamide-Induced Antinociception and Cross-Tolerance to  $\Delta^9$ -THC after Intrathecal Administration to Mice: Blockade of  $\Delta^9$ -THC-Induced Antinociception** Sandra P. Welch, L. Dale Dunlow, Gary S. Patrick and Raj K. Razdan 1235
- Role of Delta Opioid Receptors in the Reinforcing and Discriminative Stimulus Effects of Cocaine in Rhesus Monkeys** S. Stevens Negus, Nancy K. Mello, Philip S. Portoghese, Scott E. Lukas and Jack H. Mendelson 1245
- Increased Sensitivity to *Mu* Opiate Antinociception in the Neonatal Rat Despite Weaker Receptor-Guanyl Nucleotide Binding Protein Coupling** Rolf T. Windh and Cynthia M. Kuhn 1353
- The Ontogeny of *Mu* Opiate Tolerance and Dependence in the Rat: Antinociceptive and Biochemical Studies** Rolf T. Windh, Patrick J. Little and Cynthia M. Kuhn 1361
- $\mu$ -,  $\delta$ - and  $\kappa$ -Opiate Receptors Mediate Antinociception in the Rat Tail Flick Test Following Noxious Thermal Stimulation of One Hindpaw** G. M. Pitcher, K. Yashpal, T. J. Coderre and J. L. Henry 1428

### AUTONOMIC PHARMACOLOGY

- Effects of *Beta* Adrenoceptor Agonists and Antagonists on Adrenal Catecholamine Release in Response to Splanchnic Nerve Stimulation in Anesthetized Dogs: Role of *Beta*-1 and *Beta*-2 Adrenoceptors** Hajime Koganei, Tomohiko Kimura and Susumu Satoh 1337
- Characterization of the Facilitatory Prejunctional Purinoceptor on Adrenergic Nerves of the Rabbit Ear Artery** Reiko Ishii, Kazumasa Shinozuka, Masaru Kunitomo, Takao Hashimoto and Koichi Takeuchi 1390

### BEHAVIORAL PHARMACOLOGY

- Effects of Caffeine on Ventilation during Acute and Chronic Nicotine Administration in Rhesus Monkeys** Leonard L. Howell 1085
- The Effects of Anorectic and Aversive Agents on Deprivation-Induced Feeding and Taste Aversion Conditioning in Rats** Gregory N. Ervin, Lawrence S. Birkemo, Michael F. Johnson, L. Kendall Conger, Jack T. Mosher and J. Alan Menius, Jr. 1203
- Buprenorphine Antagonism of *Mu* Opioids in the Rhesus Monkey Tail-Withdrawal Procedure** Ellen A. Walker, Gerald Zernig and James H. Woods 1345
- Increase of Diazepam Binding Inhibitor mRNA Levels in the Brains of Chronically Ethanol-Treated and -Withdrawn Mice** Masashi Katsura, Seitaro Ohkuma, Atsushi Tsujimura and Kinya Kuriyama 1529

## CARDIOVASCULAR PHARMACOLOGY

- S 16118 (*p*-Guanidobenzoyl-[Hyp<sup>3</sup>,Thi<sup>5</sup>,D-Tic<sup>7</sup>,Oic<sup>8</sup>]Bradykinin) is a Potent and Long-Acting Bradykinin B<sub>2</sub> Receptor Antagonist, *in Vitro* and *in Vivo*** Michel Félétou, Pascale Robineau, Michel Lonchamp, Evelyne Bonnardel, Christophe Thurieau, Jean-Luc Fauchère, Peter Widdowson, Jean-Pierre Mahieu, Bernard Serkiz, Jean-Paul Volland, Corinne Martin, Emmanuel Naline, Charles Advenier, Jean-François Prost and Emmanuel Canet 1071
- Effects of the Bradykinin B<sub>2</sub> Receptor Antagonist S 16118 (*p*-Guanidobenzoyl-[Hyp<sup>3</sup>,Thi<sup>5</sup>,D-Tic<sup>7</sup>,Oic<sup>8</sup>]Bradykinin) in Different *in Vivo* Animal Models of Inflammation** Michel Félétou, Michel Lonchamp, Pascale Robineau, Isabelle Jamonneau, Christophe Thurieau, Jean-Luc Fauchère, Pia Villa, Pietro Ghezzi, Jean-François Prost and Emmanuel Canet 1078
- Effects on Atrial Repolarization of the Interaction Between K<sup>+</sup> Channel Blockers and Muscarinic Receptor Stimulation** Antonio Zaza, Gabriella Malfatto and Peter J. Schwartz 1095
- Role of Medullary I<sub>1</sub>-Imidazoline and  $\alpha_2$ -Adrenergic Receptors in the Antihypertensive Responses Evoked by Central Administration of Clonidine Analogs in Conscious Spontaneously Hypertensive Rats** Jerry J. Buccafusco, Carol A. Lapp, Kelly L. Westbrooks and Paul Ernsberger 1162
- Electrophysiological Effect of BRL-32872, a Novel Antiarrhythmic Agent with Potassium and Calcium Channel Blocking Properties, in Guinea Pig Cardiac Isolated Preparations** Antoine Bril, Jean-François Faivre, Marie-Claire Forest, Brigitte Cheval, Bernard Gout, Philippe Linée, Robert R. Ruffolo Jr. and Robert H. Poyser 1264
- A Possible Involvement of Sodium Channel Blockade of Class-I-Type Antiarrhythmic Agents in Postischemic Contractile Recovery of Isolated, Perfused Hearts** Satoshi Takeo, Kouichi Tanonaka, Masako Hayashi, Kyoko Yamamoto, Jin-Xun Liu, Toru Kamiyama, Norikazu Yamaguchi, Akira Miura and Takashi Natsukawa 1403
- Pharmacological Characterization of PD 156707, an Orally Active ET<sub>A</sub> Receptor Antagonist** Elwood E. Reynolds, Joan A. Keiser, Stephen J. Haleen, Donnelle M. Walker, Bronislawa Olszewski, Richard L. Schroeder, David G. Taylor, Ok Hwang, Kathleen M. Welch, Michael A. Flynn, Deanna M. Thompson, Jeremy J. Edmunds, Kent A. Berryman, Mark Plummer, Xue-Min Cheng, William C. Patt and Annette M. Doherty 1410
- Carvedilol, a New Vasodilating *Beta*-Adrenoceptor Blocker, Inhibits Oxidation of Low-Density Lipoproteins by Vascular Smooth Muscle Cells and Prevents Leukocyte Adhesion to Smooth Muscle Cells** Tian-Li Yue, Xinkang Wang, Juan-Li Gu, Robert R. Ruffolo, Jr. and Giora Z. Feuerstein 1442

## CELLULAR AND MOLECULAR PHARMACOLOGY

- Action Potentials, Ionic Currents and Cell Water in Guinea Pig Ventricular Preparations Exposed to Dimethyl Sulfoxide** Toshitsugu Ogura, Lesya M. Shuba and Terence F. McDonald 1273
- Ontogenically Related Properties of *N*-Methyl-D-Aspartate Receptors in Rat Hippocampal Neurons and the Age-Specific Sensitivity of Developing Neurons to Lead** Kumatoshi Ishihara, Manickavasagom Alkondon, Joseph G. Montes and Edson X. Albuquerque 1459
- Nicotinic Responses in Acutely Dissociated Rat Hippocampal Neurons and the Selective Blockade of Fast-Desensitizing Nicotinic Currents by Lead** Kumatoshi Ishihara, Manickavasagom Alkondon, Joseph G. Montes and Edson X. Albuquerque 1471

## DRUG METABOLISM AND DISPOSITION

- Saturable Uptake of a Recombinant Human Granulocyte Colony-Stimulating Factor Derivative, Nartograstim, by the Bone Marrow and Spleen of Rats *In Vivo*** Takashi Kuwabara, Tatsuo Uchimura, Katsumi Takai, Hiroyuki Kobayashi, Satoshi Kobayashi and Yuichi Sugiyama 1114
- Cytochrome P-450 2E1 Is Not the Sole Catalyst of Chlorzoxazone Hydroxylation in Rat Liver Microsomes** Z. Jayyosi, D. Knoble, M. Muc, J. Erick, P. E. Thomas and M. Kelley 1156

<b>The Effect of Carbidopa and Entacapone Pretreatment on the L-Dopa Pharmacokinetics and Metabolism in Blood Plasma and Skeletal Muscle in Beagle Dog: An <i>in Vivo</i> Microdialysis Study</b>	Dirk Deleu, Sophie Sarre, Guy Ebinger and Yvette Michotte	1323
<b>Right Heart Failure Impairs Hepatic Oxygenation and Theophylline Clearance in Rats</b>	C. Y. Ng, P. W. Angus, H. Ghabrial, S. T. Chou, L. Arnolda, D. J. Morgan and R. A. Smallwood	1332
<b>Cytotoxicity of Acetaminophen in Human Cytochrome P4502E1-Transfected HepG2 Cells</b>	Yan Dai and Arthur I. Cederbaum	1497
<b>Characterization of Human Liver Microsomal UDP-Glycosyltransferases using Photoaffinity Analogs</b>	Joanna M. Little, Richard R. Drake, Roel Vonk, Folkert Kuipers, Roger Lester and Anna Radomska	1551
<b>ENDOCRINE PHARMACOLOGY</b>		
<b>Identification of a Novel Chemical Series that Blocks Interleukin-1-Stimulated Metalloprotease Activity in Chondrocytes</b>	Srinivasan Chandrasekhar, Anita K. Harvey, Colin P. Dell, Samantha J. Ambler and Colin W. Smith	1519
<b>GASTROINTESTINAL PHARMACOLOGY</b>		
<b>Benzodiazepine-Withdrawal-Induced Gastric Emptying Disturbances in Rats: Evidence for Serotonin Receptor Involvement</b>	Cécile Bonnafous, Pierre Lefevre and Lionel Bueno	995
<b>Different Mechanisms Mediated by Dopamine D1 and D2 Receptors are Involved Etiologically in Activity-Stress Gastric Lesion of the Rat</b>	Kazuhiko Nomura, Noriaki Maeda, Takako Yoshino and Isamu Yamaguchi	1001
<b>RP 73870, a Gastrin/Cholecystokinin-B Receptor Antagonist with Potent Anti-Ulcer Activity in the Rat</b>	Charles E. Pendley, Leo R. Fitzpatrick, Alison J. Capolino, Marjorie A. Davis, Nancy J. Esterline, Anna Jakubowska, Phillippe Bertrand, Claude Guyon, Marie-Christine Dubroeuq and Gregory E. Martin	1015
<b>Polymeric Delivery of the Active Isomer of Misoprostol Reduces Systemic Availability and Uterotonic Activity</b>	G. W. Gullikson, R. F. Loeffler, D. V. Mehrotra, J. J. Casler, R. G. Bianchi, R. E. Schmidt, N. Khoshaba and W. E. Perkins	1123
<b>Regulation of Ion Transport by Endothelins in Rat Colonic Mucosa: Effects of an ET<sub>A</sub> Antagonist (FR139317) and an ET<sub>B</sub> Agonist (IRL1620)</b>	Masaya Hosokawa, Hideaki Tsukada, Shunji Ueda, Masahiko Sakai, Minoru Okuma, Kyoko Oda, Misato Takimoto, Toshikazu Okada and Yoshihiro Urade	1313
<b>Inhibitors of Phosphodiesterase IV (PDE IV) Increase Acid Secretion in Rabbit Isolated Gastric Glands: Correlation Between Function and Interaction with a High-Affinity Rolipram Binding Site</b>	Mary S. Barnette, Marilyn Grous, Lenora B. Cieslinski, Miriam Burman, Siegfried B. Christensen and Theodore J. Torphy	1396
<b>IMMUNOPHARMACOLOGY</b>		
<b>Antiproliferative Effects of <math>\delta</math> Opioids on Highly Purified CD4<sup>+</sup> and CD8<sup>+</sup> Murine T Cells</b>	N. A. Shahabi and B. M. Sharp	1105
<b><math>\Delta^9</math>-Tetrahydrocannabinol Modulates Antigen Processing by Macrophages</b>	Kathleen L. McCoy, David Gainey and Guy A. Cabral	1216
<b>The Nitric Oxide Synthase Inhibitor, L-N<sup>G</sup>-Monomethylarginine, Reduces Carrageenan-Induced Pleurisy in the Rat</b>	W. Ross Tracey, Masaki Nakane, Jane Kuk, Gerald Budzik, Vered Klinghofer, Richard Harris and George Carter	1295
<b>Inhibition of Interleukin-1 and Tumor Necrosis Factor-<math>\alpha</math> Synthesis Following Treatment of Macrophages with the <i>Kappa</i> Opioid Agonist U50,488H</b>	Stanley M. Belkowski, Candido Alicea, Toby K. Eisenstein, Martin W. Adler and Thomas J. Rogers	1491

**Specific Transcriptional Inhibition of Bone Marrow-Derived Macrophage Tumor Necrosis Factor- $\alpha$  Gene Expression and Protein Production Using Novel Enantiomeric Carbocyclic Nucleoside Analogues**

Marite Bradshaw, Mark S. Rutherford, Brenda J. Hoeper, Charlene D. McWhinney, David R. Borcherding, Lawrence B. Schook and Carl K. Edwards, III 1506

**NEUROPHARMACOLOGY**

**Anticonvulsant Efficacy/Safety Properties of 2-Amino-N-(1,2-Diphenylethyl)Acetamide Hydrochloride**

Gene C. Palmer, Mary L. Stagnitto, George E. Garske, James J. Napier, Eric W. Harris, Fred C. Kaiser, Ronald C. Griffith, Jose H. Woodhead, H. Steve White, Harold H. Wolf and Ewart A. Swinyard 1023

**Modulation of the Activity of Central Serotonergic Neurones by Novel Serotonin<sub>1A</sub> Receptor Agonists and Antagonists: A Comparison to Adrenergic and Dopaminergic Neurones in Rats**

A. Gobert, F. Lejeune, J.-M. Rivet, V. Audinot, A. Newman-Tancredi and M. J. Millan 1032

**Modulation of Methylenedioxymethamphetamine-Induced Striatal Dopamine Release by the Interaction Between Serotonin and  $\gamma$ -Aminobutyric Acid in the Substantia Nigra**

Bryan K. Yamamoto, J. Frank Nash and Gary A. Gudelsky 1063

**Modulation of the 5-Hydroxytryptamine<sub>4</sub> Receptor-Mediated Response by Short-term and Long-term Administration of Corticosterone in Rat CA1 Hippocampal Pyramidal Neurons**

Susanne Birnstiel and Sheryl G. Beck 1132

**Serotonin Potentiates Ethanol-Induced Excitation of Ventral Tegmental Area Neurons in Brain Slices from Three Different Rat Strains**

Mark S. Brodie, Radmila D. Trifunović and Sarah A. Shefner 1139

**Prenatal Cocaine Exposure Selectively Reduces Mesocortical Dopamine Release**

Hoau-Yan Wang, Jupiter M. Yeung and Eitan Friedman 1211

**Does [<sup>3</sup>H]2-Methoxy-Idazoxan (RX 821002) Detect More  $\alpha$ -2-Adrenoceptor Agonist High-Affinity Sites than [<sup>3</sup>H]Rauwolscine? A Comparison of Nine Tissues and Cell Lines**

Wilhelm Erdbrügger, Martin Raulf, Thomas Otto and Martin C. Michel 1287

**Imidazenil, a New Anxiolytic and Anticonvulsant Drug, Attenuates a Benzodiazepine-Induced Cognition Deficit in Monkeys**

Donald M. Thompson, James Auta, Alessandro Guidotti and Erminio Costa 1307

**Antagonist Properties of LY 165,163 at Pre- and Postsynaptic Dopamine D<sub>2</sub>, D<sub>3</sub> and D<sub>1</sub> Receptors: Modulation of Agonist Actions at 5-HT<sub>1A</sub> Receptors *in Vivo***

Mark J. Millan, M. Mavridis, Jean-Michel Rivet, Valérie Audinot, Alain Gobert, Françoise Lejeune, Mauricette Brocco, Adrian Newman-Tancredi, Sophie Maurel-Remy and Karin Bervoets 1418

**Characterization of [<sup>3</sup>H]ABT-418: A Novel Cholinergic Channel Ligand**

David J. Anderson, Michael Williams, James R. Pauly, Joanna L. Raszkwicz, Jeffrey E. Campbell, Gary Rotert, Bruce Surber, Samuel B. Thomas, James Wasicak, Stephen P. Arneric and James P. Sullivan 1434

**Characterization and Distribution of Binding Sites for a New Neurotensin Receptor Antagonist Ligand, [<sup>3</sup>H]SR 48692, in the Guinea Pig Brain**

Catalina Betancur, Maryse Canton, Danielle Gully, Gema Vela, Didier Pélaprat and William Rostène 1450

**Rotation and Striatal *c-fos* Expression after Repeated, Daily Treatment with Selective Dopamine Receptor Agonists and Levodopa**

Karen E. Asin, Lisa Bednarz, Arthur Nikkel and Richard Perner 1483

**Presynaptic  $\gamma$ -Hydroxybutyric Acid (GHB) and  $\gamma$ -Aminobutyric Acid<sub>B</sub> (GABA<sub>B</sub>) Receptor-Mediated Release of GABA and glutamate (GLU) in Rat Thalamic Ventrobasal Nucleus (VB): A Possible Mechanism for the Generation of Absence-Like Seizures Induced by GHB**

Pradeep K. Banerjee and O. Carter Snead III 1534

**PROSTAGLANDINS, LEUKOTRIENES AND OTHER EICOSANOIDS**

<b>Receptor Subtypes Involved in Dual Effects Induced by Prostaglandin E<sub>2</sub> in Circular Smooth Muscle from Dog Colon</b>	Alain Botella, Michel Delvaux, Jean Fioramonti, Jacques Frexinos and Lionel Bueno	1008
<b>Pharmacological Characterization of SB 202235, a Potent and Selective 5-Lipoxygenase Inhibitor: Effects in Models of Allergic Asthma</b>	Marie C. Chabot-Fletcher, David C. Underwood, John J. Breton, Jerry L. Adams, Anne Kagey-Sobotka, Don E. Griswold, Lisa A. Marshall, Henry M. Sarau, James D. Winkler and Douglas W. P. Hay	1147
<b>Pharmacodynamics of 15(S)-Hydroperoxyeicosatetraenoic (15-HPETE) and 15(S)-Hydroxyeicosatetraenoic Acid (15-HETE) in Isolated Arteries from Guinea Pig, Rabbit, Rat and Human</b>	Hisao Matsuda, Kunio Miyatake and Sven-Erik Dahlén	1182
<b>Specific Inhibition of the Contraction of the Rat Aorta by Estradiol 17 <math>\beta</math></b>	George Thomas, Karen Ito, Evana Zikic, Tahira Bhatti, Caroline Han and Peter W. Ramwell	1544

**PULMONARY PHARMACOLOGY**

<b>Bradykinin Receptor Subtypes in Rat Lung: Effect of Interleukin-1<math>\beta</math></b>	Hideo Tsukagoshi, El-Bdaoui Haddad, Peter J. Barnes and K. Fan Chung	1257
--	---	------

**RENAL PHARMACOLOGY**

<b>Effects of Cicletanine on Kidney Function 1. Clearance and Micropuncture Studies in Anesthetized Rats</b>	Joachim Greven	1190
<b>Effects of Cicletanine on Kidney Function 2. Role of Renal Prostaglandins and Kinins, and of Muscarinic Receptors</b>	Joachim Greven, Annette Rahn and Edgar Brändle	1197
<b>Disposition of the Bromosulfophthalein-Glutathione Conjugate in the Isolated Perfused Rat Kidney</b>	C. A. Wilco Snel, Miek M. Moons, Frans G. M. Russel and Gerard J. Mulder	1300
<b>Effects of a K<sup>+</sup> Channel Blocker on Glomerular Filtration Rate and Electrolyte Excretion in Conscious Rats</b>	James H. Ludens, Michael A. Clark and Judy A. Lawson	1375
<b>Effects of a Novel K<sub>ATP</sub> Channel Blocker on Renal Tubule Function and K Channel Activity</b>	Tong Wang, Wen-Hui Wang, Gertruida Klein-Robbenhaar and Gerhard Giebisch	1382

<b>Index, Volume 273, April–June, 1995</b>		1561
--	--	------