Assessing Neurotoxicity of Drugs of Abuse

Editor:
Lynda Erinoff, Ph.D.

NIDA Research Monograph 136
1993

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health

National Institute on Drug Abuse
5600 Fishers Lane
Rockville, MD 20857
## Contents

<table>
<thead>
<tr>
<th>Preface</th>
<th>Lynda Erinoff</th>
<th>v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurobehavioral Methods Used in Neurotoxicology</td>
<td>Hugh A. Tilson</td>
<td>1</td>
</tr>
<tr>
<td>Behavioral Consequences of Partial Monoamine Depletion in the CNS After Methamphetamine-Like Drugs: The Conflict</td>
<td>Lewis S. Seiden, William L. Woolverton, Stanley A. Lorens, Joseph E.G. Williams, Rebecca L. Corwin, Norio Hata, Mary Olimski</td>
<td>34</td>
</tr>
<tr>
<td>Strategies for Detecting Subclinical Monoamine Depletions in Humans</td>
<td>Una D. McCann and George A. Ricaurte</td>
<td>53</td>
</tr>
<tr>
<td>Sensory Evoked Potentials: Measures of Neurotoxicity</td>
<td>William K. Boyes</td>
<td>63</td>
</tr>
<tr>
<td>Silver Staining as a Tool for Neurotoxic Assessment</td>
<td>Carlos A. Beltramino, José de Olmos, Ferenc Gallyas, Lennart Heimer, and László Záborszky</td>
<td>101</td>
</tr>
<tr>
<td>Mapping Toxicant-Induced Nervous System Damage With a Cupric Silver Stain: A Quantitative Analysis of Neural Degeneration Induced by 3,4-Methylenedioxymethamphetamine</td>
<td>Karl F. Jensen, Jeanene Olin, Najwa Haykal-Coates, James O'Callaghan, Diane B. Miller, and José S. de Olmos</td>
<td>133</td>
</tr>
</tbody>
</table>
Reactions of 5-HT Neurons to Drugs of Abuse: Neurotoxicity and Plasticity ........................................ 155
   Mary Ann Wilson, Laura A. Mamounas, Kenneth H. Fasman,
   Karen J. Axt, and Mark E. Molliver

Quantification of Reactive Gliosis as an Approach to Neurotoxicity Assessment ................................. 188
   James P. O'Callaghan and Diane B. Miller

Pharmacokinetic Approaches to the Study of Drug Action and Toxicity .................................................. 213
   Arthur K. Cho, Masayuki Hiramatsu, Yoshito Kumagai,
   and Nita Patel

Mechanisms Mediating Biogenic Amine Deficits Induced by Amphetamine and Its Congeners .................. 226
   James W. Gibb, Michel Johnson, Donna M. Stone,
   and Glen R. Hanson

Neurotoxicity and Drugs of Abuse: Cannabinoid Interaction With Brain Glucocorticoid Receptors ........... 242
   Philip W. Landfield and J. Charles Eldridge

Nitric Oxide as a Mediator of Neurotoxicity ................................................................................................. 253
   Ted M. Dawson, Valina L. Dawson, and Solomon H. Snyder

List of NIDA Research Monographs ........................................................................................................... 274