

CONTENTS

Preface	x
1. The Chemical Constituents of <i>Cannabis sativa</i> and the Endocannabinoid System	1
<i>Vincenzo Di Marzo and Emil Pop</i>	
2. Pharmacology and Medicinal Chemistry of THC	8
<i>Emil Pop</i>	
Pharmacology of THC	9
Medicinal Chemistry	16
3. The Pharmacology and Therapeutic Potential of Cannabidiol	32
<i>Roger G. Pertwee</i>	
Receptor Interactions of Cannabidiol	35
Effects of CBD on Central and Peripheral Neurotransmission	42
Fate of Anandamide and Palmitoylethanolamide	43
Anxiolytic and Antipsychotic Effects	44
Anticonvulsant Effects of CBD	46
Neuroprotective Effect of CBD	53
Effects of CBD on the Production of Mediators of Inflammation and Immune Responses	54
Effects of CBD on Cancer Cell Proliferation	59
Effects of CBD on Cytochrome P450 (CYP) Isozymes	60
Effects of CBD on Membrane Fluidity and Stability	61
Other Effects of CBD	62
Interactions between CBD and Δ^9 -THC	64
Structure-Activity Relationships	65
4. Cannabinoid Receptors and Signal Transduction	84
<i>Allyn C. Howlett and Joong-Youn Shim</i>	
CB ₁ Receptor and Signal Transduction Pathways	84
CB ₂ Receptor and Signal Transduction Pathways	87
Endothelial Anandamide Receptor: Pharmacology and Signal Transduction Pathways	88
Mechanism of Receptor-Mediated G Protein Coupling	88
5. Endocannabinoids	98
<i>Luciano De Petrocellis, Tiziana Bisogno and Vincenzo Di Marzo</i>	
Discovery of the Endocannabinoids	99
Quantitative Analysis of Endocannabinoids in Mammals	100
Biosynthesis, Action and Inactivation of Endocannabinoids	101
Possible Physiological and Pathological Functions of Endocannabinoids in the CNS—An Overview	113
Endocannabinoids: Relax, Eat, Rest, Forget and Protect	118

6. Chemistry and Structure Activity Relationships for Tetrahydrocannabinols and Endocannabinoids	131
<i>R. K. Razdan</i>	
Endocannabinoids	138
Pyrazole Based Antagonists	141
7. Cannabinoids and Medicine: Eating Disorders, Nausea and Emesis...	147
<i>Tim C. Kirkham</i>	
Endocannabinoids and the Physiological Regulation of Appetite and Body Weight	147
Disorders of Appetite and Body Weight	150
Obesity	150
Cachexia, Anorexia and Malnutrition in Disease	152
Nausea and Emesis	155
8. Cannabinoids and Medicine II: The Role of Cannabinoids in Multiple Sclerosis and Neuronal Damage	161
<i>Gareth Pryce and David Baker</i>	
Multiple Sclerosis	162
Head Injury and Stroke	167
Glaucoma	169
Parkinson's Disease	170
Huntington's Disease	171
Motor Neuron Diseases	172
Alzheimer's Disease	173
9. Endocannabinoids and Related Fatty Acid Derivatives in Pain Modulation: Behavioral, Neurophysiological and Neuroanatomical Perspectives on Cannabinoid Antinociception	181
<i>Andrea G. Hohmann and J. Michael Walker</i>	
Functional Significance of a Cannabinoid Transmitter System	181
Subtypes of Cannabinoid Receptors	182
Endocannabinoids	182
Cannabinoid Receptor Pharmacology	183
Antinociceptive Effects of Cannabinoids	183
Cannabinoid-Induced Suppression of Nociceptive Transmission	183
Spinal and Peripheral Cannabinoid Antinociceptive Mechanisms	184
Evidence for Endocannabinoid Modulation of Nociception at the Supraspinal Level	187
Role of Other Endocannabinoids and Related Fatty Acid Derivatives	189
Localization of Cannabinoid Receptors and mRNA	190
Cannabinoid Receptor Distribution on Central Terminals of Primary Afferents	193

10. Endocannabinoids and Alcohol Drinking Behavior	205
<i>George Kunos, Lei Wang, Jie Liu, Douglas Osei-Hyiaman and Judith Harvey-White</i>	
Endocannabinoids and Brain Reward Mechanisms	205
Endocannabinoids As Regulators of Alcohol Preference	206
Age-Dependence of Alcohol Preference and Endocannabinoid Signaling in Mice	207
Endocannabinoids and Alcohol-Withdrawal	209
A New Hypothesis	209
Index	213