COX-2 Blockade in Cancer Prevention and Therapy

Edited by

RANDALL E. HARRIS, MD, PhD

The Ohio State University College of Medicine and School of Public Health, Columbus, OH

HUMANA PRESS
TOTOWA, NEW JERSEY
CONTENTS

Preface .................................................................................................................. v
Contributors ......................................................................................................... ix

PART I. HISTORICAL PERSPECTIVES

1 Dietary Fatty Acids, COX-2 Blockade, and Carcinogenesis .......... 3
   Rashida A. Karmali

2 Historical Aspects of COX-2: Cloning and Characterization
   of the cDNA, Protein and Gene ................................................................. 13
   Harvey R. Herschman

PART II. EPIDEMIOLOGY OF NSAIDS AND CANCER

3 Epidemiology of Nonsteroidal Anti-Inflammatory Drugs
   and Colorectal Cancer .............................................................................. 35
   Michael J. Thun and S. Jane Henley

4 Epidemiology of Breast Cancer and Nonsteroidal
   Anti-Inflammatory Drugs: Extension of the Dietary
   Fat Hypothesis of Breast Cancer .............................................................. 57
   Randall E. Harris

PART III. ANIMAL MODELS OF CARCINOGENESIS

5 Role of Synthetic and Naturally Occurring Cyclooxygenase
   Inhibitors in Colon Cancer Prevention ...................................................... 71
   Bandaru S. Reddy and Chinthalapally V. Rao

6 Chemoprevention of Breast Cancer by Nonsteroidal
   Anti-Inflammatory Drugs and Selective COX-2
   Blockade in Animals .................................................................................. 85
   Hussein M. Abou-Issa, Galal A. Alshafie, and Randall E. Harris

7 The Role of Cyclooxygenase-2 in the Prevention and Therapy
   of Lung Cancer ............................................................................................ 99
   Hildegard M. Schuller

8 Nonsteroidal Anti-Inflammatory Drugs, Prostaglandins,
   and Apc-Driven Intestinal Tumorigenesis .............................................. 117
   Jay Whelan and Michael F. McEntee

9 Cyclooxygenase-1 and Cyclooxygenase-2 Knockout Mice
   Provide Insights into Beneficial and Adverse Effects
   of Nonsteroidal Anti-Inflammatory Drugs .............................................. 147
   Robert Langenbach

PART IV. MOLECULAR BIOLOGY OF COX-2

10 Cyclooxygenase-2, Prostaglandins,
    and Colorectal Carcinogenesis ................................................................. 159
   Rajnish A. Gupta and Raymond N. DuBois
11 Regulation of Expression and Potential Carcinogenic Role of Cyclooxygenase-2 ...................................................... 171
Byeong-Churl Jang and Timothy Hla

12 Cyclooxygenase-2 and Cancer .............................................. 185
Alane T. Koki, Kathleen M. Leahy, Janet M. Harmon, and Jaime L. Masferrer

13 Interactions of Cyclooxygenase and Aromatase Pathways in Normal and Malignant Breast Cells .............................................. 205
Jeanette A. Richards and Robert W. Brueggemeier

14 Association of COX-2 and PPARs in Carcinogenesis and Chemoprevention ........................................................................... 225
Tong-Chuan He

15 Carcinogenesis Involving Cyclooxygenase and Lipoxygenase ... 245
Linda C. Hsi and Thomas E. Eling

PART V. CLINICAL APPLICATIONS

16 The Development of Drugs that Target Cyclooxygenase-2 .......... 259
Timothy Maziasz, K. Nasir Khan, John Talley, James Gierse, and Karen Seibert

17 Chemoprevention of Cancer by NSAIDs and Selective COX-2 Blockade ................................................................................. 279
Gary J. Kelloff, Vernon E. Steele, and Caroline C. Sigman

18 Potential for Inhibitors of Cyclooxygenase-2 to Enhance Tumor Radioresponse ................................................................. 301
Randy Burd, Hak Choy, and Adam Dicker

19 Potential Role of NSAIDs and COX-2 Blockade in Cancer Therapy .......................................................................................... 313
William F. Anderson, Asad Umar, Jaye L. Viner, and Ernest T. Hawk

20 Cyclooxygenase-2 Blockade in Cancer Prevention and Therapy: Widening the Scope of Impact .................................................. 341
Randall E. Harris

Index ................................................................................................. 367