

Article

# Deacetylated Sialic Acid Sensitizes Lung and Colon Cancers to Novel Cucurbitacin-Inspired Estrone Epidermal Growth Factor Receptor (EGFR) Inhibitor Analogs

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**Abstract:** Cancers utilize sugar residues such as sialic acids (Sia) to improve their ability to survive. Sia presents a variety of functional group alterations, including O-acetylation on the C6 hydroxylated tail. Previously, sialylation has been reported to suppress EGFR activation and increase cancer cell sensitivity to Tyrosine Kinase Inhibitors (TKIs). In this study, we report on the effect of deacetylated Sia on the activity of three novel EGFR-targeting Cucurbitacin-inspired estrone analogs (CIEAs), MMA 294, MMA 321, and MMA 320, in lung and colon cancer cells. Acetylation was modulated by the removal of Sialate O-Acetyltransferase, also known as CAS1 Domain-containing protein (CASD1) gene via CRISPR-Cas9 gene editing. Using a variety of cell-based approaches including MTT cell viability assay, flow cytometry, immunofluorescence assay and in-cell ELISA we observed that deacetylated Sia-expressing knockout cells (1.24–6.49  $\mu$ M) were highly sensitive to all CIEAs compared with the control cells (8.82–20.97  $\mu$ M). Apoptosis and varied stage cell cycle arrest (G0/G1 and G2/M) were elucidated as mechanistic modes of action of the CIEAs. Further studies implicated overexpression of CIEAs' cognate protein target, phosphorylated EGFR, in the chemosensitivity of the deacetylated Sia-expressing knockout cells. This observation correlated with significantly decreased levels of key downstream proteins (phosphorylated ERK and mTOR) of the EGFR pathway in knockout cells compared with controls when treated with CIEAs. Collectively, our findings indicate that Sia deacetylation renders lung and colon cancer cells susceptible to EGFR therapeutics and provide insights for future therapeutic interventions.

**Keywords:** sialic acid; CASD1; apoptosis; estrone analogs; Epidermal Growth Factor Receptor (EGFR)



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## 1. Introduction

Sialic acids (Sia), the terminal residues on glycoproteins and lipids are important sugar residues that play key roles in intercellular communication and migration [1–3]. Physiologically, Sias and their non-canonical forms (Figure 1A) can be modified with several functional groups, implicating them in the pathogenesis of several disease conditions, including autoimmune disorders, inflammation, coronary artery disease, influenza infections, SARS-CoV2 infections, and cancer among others [4–7]. The acetylation of Sia, a biological phenomenon which is mediated by Sialate O-acetyl transferase (CASD1) enzyme (Figure 1B), for instance, has been reported to affect immune cells' activity, and growth of tumors [1,8,9]. Specifically, aberrant expression of CASD1 has been reported to slow down apoptosis and promote rapid growth of tumors [10]. Tumors in such scenarios respond poorly to chemotherapy, thus warranting alternative treatment regimens. Targeted

# The Colon Effect A Novel

**Robert Wyllie, Jeffrey S. Hyams, Marsha  
Kay**



## **The Colon Effect A Novel:**

**The Cat - E-Book** Susan E. Little, 2024-03-05 Comprehensive in scope and exclusively devoted to feline medical care Dr Susan Little's *The Cat Clinical Medicine and Management* 2nd Edition is an essential resource for providing complete state of the art care to cats Authoritative clinically focused information is enhanced by full color images tables boxes algorithms key points and more all in an easy to understand quick reference format Dr Little and her expert contributors address the unique concerns and challenges facing any practitioner providing care for cats including the latest advances in feline medical diagnosis and management and the clinical applications to everyday practice An eBook version included with print purchase provides access to all the text figures and references with the ability to search customize content make notes and highlights and have content read aloud The eBook also offers convenient video lessons and client handouts Covers the latest advances in feline medicine from a systemic and adjunctive care perspective making it the most comprehensive feline medical reference available with a strong clinical focus Addresses key topics unique to feline medicine and not currently covered in other books including insights and clinical advances attributable to the mapping of the feline genome medical conditions associated with behavioral problems managing the feline patient with co existing and chronic diseases special medical problems and care considerations for the geriatric cat environmental enrichment for the indoor cat feline zoonotic agents and implications for human health and humane solutions for shelter medicine and overpopulation challenges Helps meet the increasing demand for state of the art medical care by cat owners including advanced diagnostic services and treatments designed to extend and improve quality of life for feline companions Features a full color design with hundreds of schematic drawings tables boxes key points algorithms and photographs for quick and easy access to information Provides in depth information on indoor cats and senior cats including timely guidance on meeting owners expectations for longer healthier lives for their cats Addresses the challenges of cat overpopulation particularly humane approaches to improve quality of life for millions of feral and community cats and minimize their impact on public health and endangered species of animals Presents information written in the manner of expanded conference proceedings delivering the latest insights and most current approaches to management of feline medical disorders Includes contributions from approximately 80 contributors including many from outside the US to provide a global perspective and valuable expertise from those most knowledgeable in the field of feline medical care Textbook of Critical Care E-Book Jean-Louis Vincent, Edward Abraham, Patrick Kochanek, Frederick A. Moore, Mitchell P. Fink, 2011-05-12 *Textbook of Critical Care* by Drs Jean Louis Vincent Edward Abraham Frederick A Moore Patrick Kochanek and Mitchell P Fink remains your best source on effective management of critically ill patients This trusted reference acclaimed for its success in bridging the gap between medical and surgical critical care now features an even stronger focus on patient outcomes equipping you with the proven evidence based guidance you need to successfully overcome a full range of practice challenges Inside you ll find totally updated coverage of

vital topics such as coagulation and apoptosis in certain critical care illnesses such as acute lung injury and adult respiratory distress syndrome sepsis and other serious infectious diseases specific organ dysfunction and failure and many other vital topics At [www.expertconsult.com](http://www.expertconsult.com) you can access the complete contents of the book online rapidly searchable with regular updates plus new videos that demonstrate how to perform key critical care procedures The result is an even more indispensable reference for every ICU Access the complete contents of the book online at [www.expertconsult.com](http://www.expertconsult.com) rapidly searchable and stay current for years to come with regular online updates Practice with confidence by consulting with a who s who of global experts on every facet of critical care medicine Implement today s most promising evidence based care strategies with an enhanced focus on patient outcomes Effectively apply the latest techniques and approaches with totally updated coverage of the importance of coagulation and apoptosis in certain critical care illnesses such as acute lung injury and adult respiratory distress syndrome sepsis and other serious infectious diseases specific organ dysfunction and failure and many other vital topics See how to perform key critical care procedures by watching a wealth of new videos online Focus on the practical guidance you need with the aid of a new more templated format in which basic science content has been integrated within clinical chapters and all procedural content has been streamlined for online presentation and paired with videos

*Gasotransmitters: novel regulators of ion channels and transporters* Wolfgang G. Clauss, 2013-04-23 Normal 0 false false false EN US X NONE X NONE Style Definitions table MsoNormalTable mso style name Table Normal mso tstyle rowband size 0 mso tstyle colband size 0 mso style noshow yes mso style priority 99 mso style parent mso padding alt 0in 5 4pt 0in 5 4pt mso para margin top 0in mso para margin right 0in mso para margin bottom 10 0pt mso para margin left 0in line height 115% mso pagination widow orphan font size 11 0pt font family Calibri sans serif mso ascii font family Calibri mso ascii theme font minor latin mso hansi font family Calibri mso hansi theme font minor latin Small gaseous molecules such as nitric oxide NO carbon monoxide CO and hydrogen sulphide H<sub>2</sub>S are emerging as important regulators of various cellular functions Especially ion channels and transporters have been demonstrated to represent prominent molecular targets for those gases and are thus key factors in gas induced cell signalling This Research Topic will focus on the interaction of gaseous molecules with ion channels transporters and will address the following questions i Which ion channels transporters are regulated by gases ii How are ion channels transporters mechanistically regulated by gases iii What are cellular and physiological processes which are triggered by the interaction of gases with ion channels transporters

**Pediatric Gastrointestinal and Liver Disease - E-BOOK** Robert Wyllie, Jeffrey S. Hyams, Marsha Kay, 2025-05-31 Accessible practical and focused on diagnosis and treatment Pediatric Gastrointestinal and Liver Disease Seventh Edition covers the entire spectrum of pediatric GI hepatic and nutritional disorders This popular reference offers definitive guidance from experienced editors Drs Robert Wyllie Jeffrey S Hyams and Marsha Kay as well as globally renowned contributors who share their knowledge and expertise on complex issues Full color illustrations review questions online real world case studies and

detailed instruction on performing key procedures ensure that this updated edition remains your reference of choice in this fast changing area Includes significantly updated coverage of the gut microbiome new biologic therapies for the treatment of pediatric inflammatory bowel diseases advancements in the treatment of pediatric liver diseases including metabolic associated fatty liver disease MAFLD and new diagnostic imaging techniques Features a robust art program with full color anatomical figures clinical photos and other illustrations throughout the text Details key procedures such as esophagogastroduodenoscopy and related techniques colonoscopy and polypectomy endoscopic retrograde cholangiopancreatography and endoscopic ultrasound capsule endoscopy and small bowel enteroscopy GI motility procedures and more Prepares you for certification and recertification with more than 400 board style review questions answers and rationales online Contains numerous algorithms that provide quick and easy retrieval of diagnostic screening and treatment information as well as detailed diagrams that accurately illustrate complex concepts and provide at a glance recognition of disease processes An ideal everyday resource for pediatric gastroenterologists and hepatologists pediatric dietitians and nutritionists pediatricians family medicine practitioners PAs and NPs Any additional digital ancillary content may publish up to 6 weeks following the publication date

**Herbal Medicines for Gastrointestinal and Hepatic Diseases - Novel Pharmacological and Toxicological approaches, Volume I, 2nd edition** Muhammad Hasnat,,Mirza Muhammad Faran Ashraf Baig,,Mohammad Saleem,Aftab Ullah,Muhammad Faisal Nadeem,Alessandra Durazzo,Massimo Lucarini,2023-07-21 This Research Topic is part of a series with Herbal Medicines for Gastrointestinal and Hepatic Diseases Novel Pharmacological and Toxicological approaches Volume II Ethnopharmacology deals with the exchange of knowledge about people s use of herbal medicines and their pharmacological effects The information related to therapeutic agents of plant origin and their toxic effects was preserved by oral tradition as well as recorded in materia medica Many drugs that are now available on the market have been developed from this valuable information Today scientists that specialize in medicinal chemistry use these existing herbal drugs to develop and produce more therapeutically active agents with less toxic side effects The gastrointestinal tract GIT is a multi organ system consisting of bacteria and digestive enzymes that have the capacity of degrading food and other molecules Diseases associated with this organ system include peptic ulcer inflammatory bowel disease gastric cancer to name a few The liver receives seventy percent of its blood supply from the GIT via the hepatic portal vein The disruption in the gut liver axis is associated with liver diseases including alcohol associated liver disease ALD non alcoholic fatty liver disease NAFLD and autoimmune liver disease AILD NAFLD can cause non alcoholic steatohepatitis which can develop into liver cirrhosis through inflammation and fibrosis Liver cirrhosis is categorized as an end stage of chronic liver disease which impairs innate immunity related genes Growing evidence from preclinical studies proposes that the gut liver axis leads to targeted therapeutic modalities for various liver injuries Therefore therapeutic treatment of these conditions is essential to prevent progression to these more harmful late stage diseases

*Consultations*

*in Feline Internal Medicine, Volume 6 - E-Book* John R. August, 2009-11-10 Completely revised and updated with 80 all new chapters covering the most important information on current diagnostic treatment and preventive challenges facing feline practitioners today Consultations in Feline Internal Medicine is an invaluable addition to every small animal clinician's library Full color illustrations and expert contributions help you master and apply the latest advances in feline nutrition emerging diseases pet overpopulation advanced imaging and more with a comprehensive clinically relevant approach More than 100 worldwide leaders in small animal practice provide expert insight across the full spectrum of feline internal medicine Extensive references make it easy to find additional information about specific topics most important to your practice Current evidence based coverage reflects the latest findings and reports on pressing topics such as Upper Respiratory Tract Aspergillosis Exocrine Pancreatic Insufficiency Diagnostic Imaging of the Ear Cardiac Blood Tests Urological Interventional Techniques A new section on feline nutrition highlights the impact of nutritional considerations on feline health A dynamic full color design incorporating hundreds of NEW illustrations and tables clarifies concepts and helps you interpret clinical data     Intralingual Translation of British Novels Linda Pillière, 2021-04-22 Shortlisted for the ESSE 2022 Book Awards Shortlisted for the 2022 SAES AFEA Research Prize Building on an upsurge of interest in the Americanisation of British novels triggered by the Harry Potter series this book explores the various ways that British novels from children's fiction to travelogues and Book Prize winners have been adapted and rewritten for the US market Drawing on a vast corpus of over 80 works and integrating the latest research in multimodality and stylistics Linda Pillière analyses the modifications introduced to make British English texts more culturally acceptable and accessible to the American English reader From paratextual differences in cover illustrations typeface and footnotes to dialectal changes to lexis tense syntax and punctuation Pillière explores the sociocultural and ideological pressures involved in intralingual translation and shows how the stylistic effects of such changes including loss of meaning voice rhythm and word play often result in a more muted American edition In doing so she reveals how homing in on numerous small adjustments can provide fascinating insights into the American publishing process and readership     **Sleisenger and Fordtran's Gastrointestinal and Liver Disease E-Book** Mark Feldman, Lawrence S. Friedman, Lawrence J. Brandt, 2015-01-01 Now in its 10th edition Sleisenger and Fordtran's Gastrointestinal and Liver Disease remains your indispensable source for definitive state of the art answers on every aspect of gastroenterology and hepatology Overcome your most complex clinical challenges and make optimal use of the newest techniques technologies and treatments with superb guidance from hundreds of world renowned authorities Meticulous updates throughout include the latest approaches and improvements in gastrointestinal and liver disease diagnosis and therapy as well as hundreds of images and 35 new procedural videos one of the most valuable clinical resources in the dynamic field of gastroenterology and hepatology Reviewed by Brindusa Diaconu on behalf of the Journal of Gastrointestinal and Liver Diseases July 2015 an engaging educational yet clinically orientated textbook which is relevant to

modern clinical practice Reviewed by Dr Harry Brown on behalf of glycosmedia com April 2015 I can personally attest to the remarkable advances that have been made as I was author of the chapter on eosinophilic gastroenteritis in the second edition of the textbook and reading the same chapter in the tenth edition underscores the important advances that have been made in our understanding of the molecular basis as well as the pathophysiology of this and related disorders Foreword by Norton J Greenberger MD Boston Massachusetts June 2015 Consult this title on your favorite e reader Get the essential gastroenterology information you need from one authoritative source with an outstanding global reputation for excellence Zero in on the key information you need to know with a consistent full color chapter design Stay up to date with emerging and challenging topics enteric microbiota and probiotics fecal microbiota transplantation Clostridium difficile colitis and factitious gastrointestinal diseases Incorporate the latest findings and improvements in care for liver disease patients from diagnosis and treatment through post treatment strategies and management of complications Expert Consult eBook version included with purchase This enhanced eBook experience allows you to search all of the text figures references and videos from the book on a variety of devices **Braddom's Physical Medicine and Rehabilitation E-Book** David X.

Cifu,2020-08-01 Thoroughly updated to reflect the latest advances and technologies Braddom's Physical Medicine and Rehabilitation 6th Edition remains the market leader in the field of PM R For more than 20 years this bestselling reference has been the go to resource for the entire rehabilitation team providing in depth coverage of essential core principles along with the latest research technologies and procedures that enhance patient care and facilitate optimal return to function In this edition lead editor Dr David X Cifu and his team of expert associate editors and contributing authors employ a more succinct format that emphasizes need to know material incorporating new key summary features including high yield information and study sheets for problem based learning Focuses more heavily on rehabilitation with case studies throughout and more comprehensive coverage of stroke evaluation rehabilitation and therapies Provides expanded information on key topics such as interventional pain management options gait and prosthetics USG fluoroscopy electrodiagnosis and more Features a new chapter on Occupational Medicine and Vocational Rehabilitation plus enhanced coverage of the neurogenic bladder rehabilitation and prosthetic restoration in upper limb amputation and acute medical conditions including cardiac disease medical frailty and renal failure Discusses quality and outcome measures for medical rehabilitation practical aspects of impairment rating and disability determination integrative medicine in rehabilitation and assistive technology Offers highly illustrated templated chapters that are easy to navigate without sacrificing coverage of key topics Includes access to dozens of even more practical videos and hundreds of integrated self assessment questions for more effective learning and retention Enhanced eBook version included with purchase Your enhanced eBook allows you to access all of the text figures and references from the book on a variety of devices *The Chemotherapy Source Book* Michael Clinton Perry,2008 The Chemotherapy Source Book Fourth Edition pulls together all the current information on the chemotherapeutic management

of cancer patients including choice of chemotherapeutic agents use of combinations and toxicity of individual drugs Organized by disease site the book brings together pharmacologic and patient management information in one source that clinicians can consult for any question encountered in the delivery of chemotherapy This updated Fourth Edition includes new drugs as well as new indications for older drugs Content has been streamlined to provide essential information more quickly for the busy practitioner Plus this edition is softcover for greater portability and convenience **Organ Cross Talk and its Impact on the Clinical Course in Multiple Trauma and Critical Illness** Klemens Horst,Markus Huber-Lang,Tom E. Mollnes,2023-05-02 Kumar and Clark's Clinical Medicine E-Book Parveen Kumar,Michael L Clark,2012-06-04 Kumar including all the major lesion morphologies covered in a single page 16 new authors New sections on protein synthesis energy production and stem cells New members of the International Advisory Board from India South Africa Poland and the Middle East 7 new online chapters from the International Advisory Board Key online features 30 extra short chapters online written by members of the International Advisory Board to cover key international issues such as malaria envenoming and HIV Animated practical procedures including lumbar puncture central venous and bladder catheterization arterial cannulation etc heart and lung sounds and interactive surface anatomy available online Full text online through StudentConsult Add your own notes and bookmarks Search across all the StudentConsult resources you own online in one place New to this edition New chapter on palliative medicine Five times the number of margin clinical photos New echocardiography images Double the number of dermatological images including all the major lesion morphologies covered in a single page 16 new authors New sections on protein synthesis energy production and stem cells New members of the International Advisory Board from India South Africa Poland and the Middle East 7 new online chapters from the International Advisory Board *Rheumatology E-Book* Marc C. Hochberg,Ellen M Gravallese,Josef S. Smolen,Desiree van der Heijde,Michael E. Weinblatt,Michael H. Weisman,2022-07-29 Covering both the scientific basis of rheumatology and practical clinical information for rheumatologists and trainees Rheumatology 8th Edition remains a leading text in this fast changing field Dr Marc Hochberg and his team of worldwide editors and authors keep you abreast of recent advances in the field all in a user friendly accessible manner Fully updated from cover to cover this two volume text is designed to meet the needs of all practicing and academic rheumatologists as well as arthritis related health care professionals and scientists interested in rheumatic and musculoskeletal diseases Covers the epidemiology pathogenesis clinical manifestations therapeutic approach and management of all major as well as rarely encountered rheumatic and musculoskeletal diseases Discusses clinical examination imaging principles differential diagnosis established and novel therapies perioperative evaluation pain management basic science and genetics of rheumatic and musculoskeletal diseases Uses a consistent logical reader friendly format with templated chapters concise text and large scale state of the art illustrations for efficient visual reference Contains new chapters covering pre clinical disease and how to address these patients common comorbidities in



rheumatoid arthritis emerging therapies for systemic sclerosis immune mediated complications of checkpoint inhibitors the epidemiology of COVID 19 and rheumatic and musculoskeletal diseases emerging treatments for osteoarthritis and big data analytics Provides updates to key topics such as systems biology and its impact on our understanding of the pathogenesis of rheumatic and musculoskeletal diseases the microbiome in rheumatic musculoskeletal diseases how to manage chronic pain in the patient with a rheumatic disease drugs and reproductive health and emerging therapies for patients with RA SLE spondyloarthritis inflammatory muscle disease and vasculitis Shares the knowledge and expertise of numerous new contributing authors as well as new co editor Dr D sir e van der Heijde who is an expert in psoriatic arthritis spondyloarthritis imaging and clinical epidemiology Provides access to concise videos depicting the use of ultrasound for diagnosis and treatment Enhanced eBook version included with purchase Your enhanced eBook allows you to access all of the text figures and references from the book on a variety of devices If you encounter issues with your eBook please contact Elsevier eBook support via [textbookscom](mailto:textbookscom) support [elsevier.com](mailto:elsevier.com)     [Abeloff's Clinical Oncology E-Book](#) Martin D. Abeloff, James O. Armitage, John E. Niederhuber, Michael B. Kastan, W. Gillies McKenna, 2008-06-30 Carrying on the tradition established by its founding editor the late Dr Martin Abeloff the 4th Edition of this respected reference synthesizes all of the latest oncology knowledge in one practical clinically focused easy to use volume It incorporates basic science pathology diagnosis management outcomes rehabilitation and prevention all in one convenient resource equipping you to overcome your toughest clinical challenges What s more you can access the complete contents of this Expert Consult title online and tap into its unparalleled guidance wherever and whenever you need it most Equips you to select the most appropriate tests and imaging studies for diagnosing and staging each type of cancer and manage your patients most effectively using all of the latest techniques and approaches Explores all of the latest scientific discoveries implications for cancer diagnosis and management Employs a multidisciplinary approach with contributions from pathologists radiation oncologists medical oncologists and surgical oncologists for well rounded perspectives on the problems you face Offers a user friendly layout with a consistent chapter format summary boxes a full color design and more than 1 445 illustrations 1 200 in full color to make reference easy and efficient Offers access to the book s complete contents online fully searchable from anyplace with an Internet connection Presents discussions on cutting edge new topics including nanotechnology functional imaging signal transduction inhibitors hormone modulators complications of transplantation and much more Includes an expanded color art program that highlights key points illustrates relevant science and clinical problems and enhances your understanding of complex concepts     **Textbook of Natural Medicine - E-Book** Joseph E. Pizzorno, Michael T. Murray, 2012-09-06 Covering preventive non invasive and natural treatments Textbook of Natural Medicine 4th Edition offers more than just alternative medicine It promotes an integrated practice that can utilize natural medicine traditional Western medicine or a combination of both in a comprehensive scientific treatment plan Based on a combination of philosophy and clinical studies Textbook of

Natural Medicine helps you provide health care that identifies and controls the underlying causes of disease is supportive of the body's own healing processes and is considerate of each patient's unique biochemistry. Internationally known authors Joseph Pizzorno and Michael Murray include detailed pharmacologic information on herbs and supplements plus evidence-based coverage of diseases and conditions to help you make accurate diagnoses and provide effective therapy. Comprehensive unique coverage makes this book the gold standard in natural medicine. A scientific presentation includes the science behind concepts and treatments and discusses Western medical treatments and how they can work with natural medicine in a comprehensive treatment plan if natural medicine is not effective, this book recommends the Western treatment. Coverage of pharmacology of natural medicines includes the uses and potential dangers of nearly 80 herbal medicines, special nutrients and other natural agents addressing topics such as general information, chemical composition, history, pharmacology, clinical applications, dosage and toxicology. In-depth evidence-based coverage of 73 diseases and conditions includes key diagnostic criteria, pathophysiology of diseases and therapeutic rationales. Coverage of potential interactions between drugs, herbs and supplements ensures the safest possible use for each of 79 herbs and supplements. Diagnostic procedures include practical, easy-to-follow descriptions of evidence-based techniques plus discussions of clinical application of diet analysis, food allergy testing, immune function assessment, fatty acid profiling, hair mineral analysis and other diagnostic approaches. Common therapeutic modalities are described and reviewed including botanical medicine, nutritional therapy, therapeutic fasting, exercise therapy, hydrotherapy, counseling, acupuncture, homeopathy and soft tissue manipulation. Coverage of syndromes and therapies helps in understanding the underlying causes of diseases by discussing topics such as food reactions, functional toxicology, sports nutrition, stress management and breathing pattern disorders. Coverage of the philosophy of natural medicine includes its history and background with discussions of toxicity, detoxification and scientific documentation of the healing actions of nature and natural substances. Internationally known authors Joseph Pizzorno and Michael Murray and more than 90 expert contributors provide material that is up-to-date, accurate and informed. More than 10,000 research literature citations show that the content is based on science rather than opinions or anecdotes. 13 useful appendices offer quick lookup of frequently used charts, handouts and information. **Endocrinology: Adult and Pediatric**

**E-Book** J. Larry Jameson, Leslie J. De Groot, 2015-02-25. Considered the definitive source in its field for over 35 years, *Endocrinology: Adult and Pediatric* has been thoroughly updated to reflect today's recent advances in adult and pediatric endocrinology. Unique perspectives from a team of trusted world-renowned experts ensure this medical reference book remains the most highly regarded text in the field. Make the best clinical decisions with an enhanced emphasis on evidence-based practice and expert opinions on treatment strategies. Zero in on the most relevant and useful references with the aid of a more focused, concise bibliography. Locate information quickly while still getting the complete coverage you expect. Now in full color with special design treatment for at a glance, pediatric content helping to distinguish the pediatric content.

Expanded coverage for key topics such as pediatric endocrinology and obesity mechanisms and treatment in addition to today's hot topics in endocrinology including endocrine disruptors bariatric surgery androgen deficiency genetic causes of obesity endocrine rhythms and the use of tyrosine kinase inhibitors in thyroid cancer New content addressing the latest advances in testosterone and estrogen replacement as well as the new causes of calcium and phosphate disorders new molecular causes of endocrine cancers new genetic causes of reproductive disorders and more Updated clinical guidelines for diabetes lipid disorders obesity management osteoporosis and more as well as essential treatment updates for the medical management of acromegaly Cushing's Disease hypercalcemia and diabetes mellitus New Key Points provide snapshots of what to expect in each chapter or serve as a refresher of what you just read Expert Consult eBook version included with purchase This enhanced eBook experience allows you to search all of the text figures references and videos from the book on a variety of devices

**Shackelford's Surgery of the Alimentary Tract, E-Book** Syed A. Ahmad, Aurora D. Pryor, 2025-05-15 Now published in partnership with the Society for Surgery of the Alimentary Tract Shackelford's Surgery of the Alimentary Tract 9th Edition offers lavishly illustrated authoritative guidance on endoscopic robotic and minimally invasive procedures as well as current medical therapies An all new editorial team led by Drs Syed A Ahmad and Aurora D Pryor provides a fresh perspective on both content and organization incorporating new and diverse images and illustrations new videos and new contributing authors who represent a who's who of international experts in the field A must have reference for more than 60 years this significantly revised two volume reference is your one stop resource for proven systematic approaches to all relevant adult and pediatric GI disorders and operations Includes new or significantly revised content on endoscopic management of esophageal gastric and rectal disease surgical management of chronic pancreatitis cystic diseases of the pancreas islet autotransplantation gallbladder cancer transplantation for oncologic indications hepatic artery infusion pumps adrenal tumors retroperitoneal sarcomas and much more Offers updated management schemas and approaches a new condensed focus on anatomy and physiology and inclusion of landmark clinical trials Discusses recent major advances in minimally invasive surgery and robotic surgery Reflects new endoluminal approaches to benign and malignant diseases new treatment algorithms based on recent clinical trials and an emphasis on minimally invasive approaches to complex GI operations Contains an abundance of beautifully detailed intraoperative and laparoscopic photographs as well as radiographs and line drawings to enhance and clarify the text Provides new videos that highlight surgical procedures synoptic operative reports and new technologies that today's surgeons need to be familiar with Features a new team of Associate Editors who have overseen extensive updates and revisions in areas of their particular expertise Esophageal Dr Christy M Dunst Stomach Small Bowel Dr Anne O Lidor Hernia Dr Ajita S Prabu Colorectal Dr Patricia Sylla Pancreas Dr Matthew H G Katz and Liver Dr Michael I D Angelica Presents essential information such as lists of differential diagnoses in tabular format for quick reference Any additional digital ancillary content may publish up to 6 weeks following

the publication date      *Pharmacology and Therapeutics for Dentistry - E-Book* John A. Yagiela, Frank J. Dowd, Bart Johnson, Angelo Mariotti, Enid A. Neidle, 2010-03-12 Use your knowledge of pharmacology to enhance oral care *Pharmacology and Therapeutics for Dentistry* 6th Edition describes how to evaluate a patient's health and optimize dental treatment by factoring in the drugs they take It explores the basic fundamentals of pharmacology special topics such as pain control fear and anxiety and oral complications of cancer therapy and most importantly the actions of specific drug groups on the human body Whether you're concerned about the drugs a patient is already taking or the drugs you prescribe for treatment this book helps you reduce risk and provide effective dental care An emphasis on the dental applications of pharmacology relates drugs to dental considerations in clinical practice Dental aspects of many drug classes are expanded to include antibiotics analgesics and anesthetics The Alternative Medicine in Dentistry chapter discusses chemicals used as alternative medicines and assesses their potential benefits and risks The Nonopioid Analgesics chapter groups together non opioid analgesics nonsteroidal anti inflammatory drugs and antirheumatic and antigout drugs making these easier to locate and study Coverage of the endocrine system includes four separate chapters for the most comprehensive coverage Drug Interactions in Clinical Dentistry appendix lists potential interactions between drugs a patient is taking for nondental conditions and drugs that may be used or prescribed during dental treatment including effects and recommendations Glossary of Abbreviations appendix includes the most common abbreviations used for drugs or conditions New Pharmacogenetics and Pharmacogenomics chapter covers the effects of genetic traits of patients on their responses to drugs A NEW introductory section offers tips for the study of dental pharmacology and relates pharmacology to dental considerations An updated discussion of drug drug interactions covers the harmful effects of mixing medications Coverage of adverse effects and mechanisms of COX 2 inhibitors antibiotic prophylaxis and antiplaque agents explains the dental risks relating to common drug treatments      **Equine Internal Medicine - E-Book** Stephen M. Reed, Warwick M. Bayly, Debra C. Sellon, 2009-12-22 Develop an essential understanding of the principles of equine disease with this one of a kind problem based resource Extensively revised and updated with contributions from an international team of experts *Equine Internal Medicine* 3rd Edition reflects the latest clinical research in equine medicine and focuses on the basic pathophysiologic mechanisms that underlie the development of various equine diseases to help you confidently diagnose treat and manage patient conditions Problem based approach outlines how to apply the latest clinical evidence directly to the conditions you'll encounter in practice Pathophysiology is emphasized throughout providing a sound basis for discussions of the diagnosis treatment and prognosis that follow Body systems chapters begin with a thorough discussion of the diagnostic method appropriate to the system including physical examination clinical pathology radiography endoscopy and ultrasonography Flow charts diagrams and algorithms clarify complex material Extensive content updates help you improve patient care with up to date research and clinical evidence across the full spectrum of equine practice including New sections on biofilm adhesins resistance to

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## Decoding **The Colon Effect A Novel**: Revealing the Captivating Potential of Verbal Expression

In a period characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its power to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**The Colon Effect A Novel**," a mesmerizing literary creation penned by a celebrated wordsmith, readers set about an enlightening odyssey, unraveling the intricate significance of language and its enduring affect our lives. In this appraisal, we shall explore the book's central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership.

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