RECENT ADVANCES IN CHEMOTHERAPY

Antimicrobial Section 1

Proceedings of the 14th International Congress of Chemotherapy, Kyoto, 1985

Edited by Joji Ishigami

UNIVERSITY OF TOKYO PRESS
Contents

Preface
Acknowledgments

Special Lecture: Resistance to β-Lactam Antibiotics in Bacteria
Susumu Mitsuhashi ................................................................. 3

Symposium: Microbial Products for Use in Anti-infective Therapy

Summary
H.-P. Kuemmerle ................................................................. 13
Special Screening Methods of Microbial Products for Anti-infective Therapy
H. Imanaka ................................................................. 15
New β-Lactam Antibiotics with a Formylamino Substituent Produced by Bacteria
H. Okazaki ................................................................. 18
Screening Anti-infectives in Response to Clinical Demands
R. L. Hamill ................................................................. 21
Clinical Evaluation of Compounds of Microbial Origin
H.-P. Kuemmerle ................................................................. 24
Pharmacokinetic Characteristics of Non-β-Lactam Antibiotics of Natural Origin
J. Barre et al. ................................................................. 27

Symposium: β-Lactam Antibiotics with Special Properties

Summary
T. Yokota ................................................................. 45
Cephem and Oxacephem Antibiotics with Activity against Methicillin-resistant Staphylococcus aureus
T. Yoshida ................................................................. 48
Cephem Antibiotics with Extended Spectrum
W. Dürckheimer and E. Schrinner ................................................................. 51
Cephem Antibiotics with Prolonged Blood Levels
J. Kosmidis ................................................................. 54
Orally Absorbed Cephem Antibiotics against Enterobacteriaceae
A. Saito ................................................................. 57
Interactions between β-Lactamases and β-Lactamase Inhibitors
J. D. Williams ................................................................. 60
Monocyclic β-Lactam Antibiotics
A. Imada ................................................................. 63
Prospects of Future β-Lactam Antibiotics with Special Properties
R. B. Sykes ................................................................. 66
Symposium: Experimental Models of Infections and Their Application in the Evaluation of New Antibiotics

Summary
O. Zak et al. ................................................................. 71
Systemic Infection in Mice: A First-line Screening Model in the Evaluation of New Antibiotics
T. Nishino and O. Zak ......................................................... 72
Experimental Streptococcal Endocarditis in Rabbits
W. Wilson ............................................................... 75
Experimental Urinary Tract Infection
M. P. Glauser and P. Meylan .............................................. 77
Experimental Bacterial Osteomyelitis in the Evaluation of Antibiotics
O. Zak ................................................................. 80
Evaluation of New Antibiotics with Experimental Models of Bacterial Meningitis
W. M. Scheld ............................................................. 83

Symposium: Transferable Drug Resistance

Summary
H. Hashimoto ................................................................. 89
Structure, Function, and Replication of the Antibiotic Resistance Plasmid NR1
R. H. Rownd ................................................................. 94
Transfer and Amplification of Resistance Genes in H. influenzae
H. von Wulffen et al. ....................................................... 97
Transferable Drug Resistance in Pseudomonas aeruginosa
S. Iyobe ................................................................. 100
Conjugation and Resistance Transfer in Streptococci
D. B. Clewell and C. Gawron-Burke ...................................... 103
Transferable Resistance to Third Generation Cephalosporins
B. Wiedemann and C. Kliebe ............................................. 106
The Evolution of Antibiotic Resistance Genes
P. Bennett et al. ............................................................. 109

Symposium: Problems of Antibiotic-resistant Enteropathogens in Asia

Summary
M. Jegathesan and M. Ohashi .............................................. 115
Drug Resistance and R Plasmids of Shigella and Salmonella in Korea
D. Chun et al. ............................................................... 117
Antimicrobial Susceptibility of Shigella and Salmonella Isolated from Patients and Scouring Pigs in Taiwan
W. C. Hsieh ............................................................... 120
Antibiotic Resistance in Enteropathogens in Malaysia
M. Jegathesan ............................................................. 123
An Overview of Antibiotic-resistant Enteric Pathogens in Singapore
S. Lam et al. ............................................................... 125
Antibiotic Resistance in Enteric Pathogens in Japan
M. Ohashi et al. ............................................................. 128
CONTENTS

Problems of Multiple Drug-resistant Enteropathogenic Bacteria in Thailand
R. Phan-Urai et al. ................................................................. 131

Changing Pattern of Resistance of Antimicrobials among S. dysenteriae Type 1 and
S. flexneri Isolated in Urban and Rural Bangladesh between 1975 to 1984
M. M. Rahaman et al. ............................................................... 134

Prevalence of Antibiotic Resistance amongst Enteropathogenic Bacteria in India
Shriniwas ................................................................. 138

Antibiotic Resistance Pattern of Enteropathogens in Indonesia
C. H. Simanjuntak ................................................................. 141

Symposium: Management of Infections in Immuno-suppressed Patients

Summary
S. M. Finegold and K. Hara ......................................................... 145

Management of Infection in Granulocytopenic Patients
J. Klastersky and F. Meunier-Carpentier ....................................................... 148

Management of Infection in Patients with Renal Failure
J. Shimada and H. Kiyota ......................................................... 151

Management of Infections in Patients with Leukemia and Lymphoma
S. C. Schimpff and T. J. Walsh ......................................................... 154

Management of Infections in Patients with Lung Cancer
A. Saito ................................................................. 156

Treatment of Legionella Pneumonia
P. L. Meenhorst ................................................................. 159

Management of Infections in Patients with Fungal Infections
Richard D. Meyer ................................................................. 161

Management of Infections in Patients with the Acquired Immune
Deficiency Syndrome
D. Armstrong ................................................................. 164

Symposium: Antibiotic Resistance in the Hospital:
Epidemiology and Strategies for Control

Summary
D. Goldmann and R. Kawana ......................................................... 169

Antibiotics-resistant Gram-negative Bacteria in Hospitals
J. F. Acar ................................................................. 171

Methicillin-resistant Staphylococcus aureus in the Hospital
M. I. McDonald et al. ................................................................. 173

The Re-emergence of Gram-positive Cocci as Major Nosocomial Pathogens
R. P. Wenzel et al. ................................................................. 176

Nosocomial Bacterial Colonization—The Critically Ill Neonate as a Model
D. Goldmann ................................................................. 178

Current Status of Nosocomial Infection in Japan
R. Kawana ................................................................. 181

Symposium: Use of Prophylactic Antibiotics in Surgical Patients

Summary
K. Ishibiki and J. F. Burke ......................................................... 187
Antibiotic Concentrations in Tissue Fluid during the Vulnerable Period as Rationale Basis of Prophylaxis of Post Operative Infections: Focus on Infections after Operations of the Colon, Biliary Tree and Bone
D. H. Wittmann ................................. 189

Penetration of Antibiotics into Intraperitoneal Exudate after Gastrectomy
N. Aikawa et al. .................................. 193

Clinical Study of Prophylactic Antibiotics to Determine the Adequate Duration of Administration
J. P. Kim and S. W. Kim .......................... 197

Prophylactic Antibiotics in Patients Undergoing Elective Biliary Tract Surgery: A Prospective Randomized Study between Cefotiam and Cefoperazone
N. Shinagawa et al. ............................... 200

Analysis of Risk of Infection: Implications for Antibiotic Prophylaxis
J. L. Meakins ..................................... 203

Prophylactic Administration of Antibiotics for Postoperative Infections in Obstetrics and Gynecology
S. Matsuda ........................................ 206

A Score System for the Objective Appraisal of Random Control Trials
M. Evans and A. V. Pollock ...................... 209

**Symposium: Recurrent Urinary Tract Infections**

Summary
Y. Naide and W. Brumfitt .......................... 215

Recurrent Urinary Tract Infections: Pathogenesis and Treatment
J. Winberg ......................................... 219

Bacteriuria in Elderly Residents of Nursing Homes
L. E. Nicolle et al. .................................. 222

Reversible Renal Failure due to Interstitial Infection of the Kidney
W. R. Cattell et al. .................................. 225

Characteristic Findings of the Recurrent Urinary Tract Infection
J. Kumazawa ........................................ 229

Relation between Bacteriuria and Death
D. A. Evans ......................................... 232

§1. New Antimicrobial Agents, Microbiology and Biochemistry

Valclavam: An Antifungal β-Lactam Antibiotic
H. Peter et al. ...................................... 237

New Isotetracenone Antibiotics, Capoamycin and Kerriamycins A, B, and C
N. Ōtake et al. ...................................... 239

Biosynthesis of Crisamicin A: A Dimeric Isochromanquinone Antibiotic Produced by *Micromonospora purpureochromogenes* var. *celinoensis*
J. A. Pope, Jr. et al. ............................... 241

Drug Immobilization on Natural Polymers
S. Dumitriu and P. Cremonesi ...................... 243

Colorimetric Determination of the Aminothiazolyl-oxyimino β-Lactam Antibiotics
J. V. Uri and T. C. Jain ............................. 245
The Isolation and Structural Elucidation of Benzanthrin A: A New Type of Quinone Antibiotic
R. Rasmussen et al. ................................................................. 247
The YTR Class of β-Lactamase Inhibitors
R. G. Micetich et al. ................................................................. 249
2'-Modified Sporaricin Derivatives
I. Watanabe et al. ................................................................. 251
Macrolide Fundamental Chemistry: Unusual 12- and 10-Membered Macrocyclic Lactone Systems from Oleandomycin. Part II
W. D. Celmer et al. ................................................................. 253
Pharmacokinetics and Metabolism of Taurulin: A New Antimicrobial and Antiendotoxin Agent
P. G. Waser et al. ................................................................. 255
The Antimicrobial and the Endotoxin Detoxifying Activities of Polymyxin B Immobilized Fiber
Y. Endo et al. ................................................................. 257
Increased Androgen Binding in Keloids and Its Inhibition with Cyocytol
D. F. King et al. ................................................................. 259
Differential Androgen Receptor Activity in Patients with Androgenic Alopecia and the Effects of Cyocytol on Dihydrotestosterone Protein Binding
L. C. Ford et al. ................................................................. 261
Effects of Cyocytol on the Hormonally Stimulated Increases in DNA and RNA Metabolism in Fungi
H. A. Hammill et al. ................................................................. 263
Dense Intraabdominal Adhesions: A Manifestation of Localized, Hyper-Androgen Receptors
L. C. Ford et al. ................................................................. 265
Effects of Cyocytol vs. 13-cis-Retinoic Acid on Dihydrotestosterone Receptor Binding in Human Facial Sebaceous Glands
D. King et al. ................................................................. 267
Effects of Cyocytol vs. 13-cis-Retinoic Acid on Dihydrotestosterone Receptor Binding in Human Facial Skin Fibroblasts
D. King et al. ................................................................. 269
Modulation of Connective Tissue Metabolism by Steroid Hormones and Ethocyn
L. C. Ford et al. ................................................................. 271
Dihydrotestosterone and Estradiol Receptors in Trichomonas vaginalis and the Effects of Cyocytol
H. A. Hammill et al. ................................................................. 273
Inhibition of Initiation of DNA Replication by Aminoglycoside Antibiotics
K. Matsunaga et al. ................................................................. 275
In vitro and in vivo Determination of the Activity of Two DNA-gyrase Inhibitor Antibiotics against Clinical Isolates
T. Kato et al. ................................................................. 277
Ultrastructure and Susceptibility of Streptococcus faecalis Exposed to Non-β-Lactam Cell Wall Inhibitors
L. Bartholomew et al. ................................................................. 279
The Mechanism of Mezlocillin Permeation to Its Sites of Action in the Bacterial Cell
R. Sonak et al. ................................................................. 281
β-Lactams and Amoeboid Forms of Streptococcus faecalis
L. Bartholomew et al. ................................................................. 283
The Effect of Sera and Antimicrobics on *Streptococcus faecalis*
L. Bartholomew *et al.* .......................................................... 285

Revaluation of Potential Efficacy of Sub-minimal Inhibitory Concentrations
of Antibiotics
G. Satta *et al.* ........................................................................... 287

Effect of Low Concentration of Antibiotics on Bacterial Cytolysins Production
A. M. Shibl .................................................................................... 289

Effect of Sub-inhibitory Doses of Ceftazidime, Norfloxacin and Thienamycin
on Some Gram-negative Strains
M. T. Mascellino *et al.* .............................................................. 291

Bactericidal Effect of Cephalosporins on *E. coli* Cultures in the Hemofiltrate
of Renal Insufficient Patients
E. Schulz *et al.* ........................................................................... 293

Coagulase-negative Staphylococci on Skin
M. Ikeda and J. Arata .................................................................... 295

Fundamental and Clinical Studies of Anaerobic Infections in Surgical Field
S. Iwai *et al.* ................................................................................ 297

Using Pharmacokinetics to Choose Antibiotic Therapy in Anaerobic Infections:
What Are the Outstanding Questions?
M. Mandelli and P. Mosconi .......................................................... 299

*Bacteroides* Species Increases Lipopolysaccharide Susceptibility of
Experimental Animals
A. C. Rodloff *et al.* ....................................................................... 301

The Influence of Single Dose Intravenous Antibiotics on Faecal Flora
and the Emergence of *Clostridium difficile*
N. S. Ambrose *et al.* .................................................................... 303

Serum Antibody Response to *Clostridium difficile* Toxins in Patients with
*Clostridium difficile* Diarrhea
B. Aronsson *et al.* ........................................................................ 305

Comparative *in vitro* Susceptibility of *Clostridium difficile* to Newer
β-Lactam Antibiotics
A. W. Chow *et al.* ........................................................................ 307

Quantitative Immunoassay of *Clostridium difficile* Enterotoxin (D-1)
by Latex Photometric Immunoassay System
H. Kohno *et al.* ............................................................................ 309

Time and Concentration Dependent Variability to the Antimycobacterial
Activity of Ethambutol
P. R. J. Gangadharam *et al.* ....................................................... 311

*In vitro* and *in vivo* Chemotherapeutic Activities of Ansamycin on
*Mycobacterium intracellulare*
P. R. J. Gangadharam *et al.* ....................................................... 314

*In vitro* Activity of Ciprofloxacin against Mycobacteria
M. V. Chadwick and H. Gaya ....................................................... 317

*In vitro* and *in vivo* Susceptibilities of *Mycobacterium fortuitum* to Ofloxacin (DL-8280)
H. Saito *et al.* ............................................................................. 319

Active Tuberculosis in Physicians: Compliance with Preventive Measures
P. J. Geiseler *et al.* .................................................................... 321

Susceptibility of Anaerobic Bacteria to 17 Antimicrobial Agents
Y. Zhang *et al.* ............................................................................ 323
Kill Kinetics and Regrowth Pattern of Bacteria Exposed to Antibiotic Concentrations Simulating Those Observed in vivo
J. P. Guggenbichler et al. .................................................. 325
Specific Binding of $^3$H-Penicillin to Particulate Fractions of Staphylococcus aureus
T. G. Easton and S. J. Seligman ........................................ 327
Coccal Transformation of Campylobacter jejuni/coli Induced by Adverse Culture Conditions or β-Lactam Antibiotics
E. Ishii et al. ........................................................................ 329
Accumulation and Subcellular Localization of a Basic Derivative of Penicillin G in J774 Macrophages
C. Renard et al. .................................................................... 331
Computerized Cell Volume Distribution Analysis of E. coli Cultures Exposed to Cephalosporins
L. von Klitzing et al. ............................................................. 333
Antagonism between Cephem Antibiotics and Polyanethol Sulfonate against Staphylococcus aureus
T. Nishino et al. .................................................................... 335
In vitro Effects of β-Lactam Antibiotics on Human Leukocytes Adhesivity and Spreading
C. Burgaleta et al. .................................................................. 337
The Levels and Possible Interactions of Microelements in Patients with Bacterial Diseases Treated by Antibiotics
M. Marolt-Gomišček et al. ...................................................... 339
Effects of Vinca Alkaloids on Monocyte Phagocytosis
B. Norberg et al. ................................................................... 341
Effect of Subinhibitory Concentrations of Ampicillin on R Plasmid Transfer by Conjugation
R. Prados et al. .................................................................... 343
Expression of the Genes Cloned in the Super-high-copy-number Plasmid pNR333
A. Mochizuki et al. ............................................................... 345
Aminoglycoside Resistance Resulting from the Production of More Than One Modifying Enzyme: The Identification of Individual Enzymes within a Mixture by HPLC
A. M. Lovering et al. ............................................................. 347
Isolation and Characterization of Norfloxacin-resistant Mutants of Escherichia coli K-12
K. Hirai et al. ...................................................................... 349
Isolation and Characteristics of Spherical and Spheroidal Mutants of Pseudomonas aeruginosa
N. Gotoh et al. ...................................................................... 351
Cell Wall Factors and Virulence of Multiply Antibiotic Resistant Staphylococcus aureus
R. R. Cutler .......................................................................... 353
Plasmid Carriage of Virulence of Multiply Resistant Strains of Staphylococcus aureus
R. R. Cutler .......................................................................... 355
Influence of Antibiotics, Alginate Biosynthesis and Hypersensitivity Mutations on Pseudomonas Virulence Factors Associated with Respiratory Infection in Patients with Cystic Fibrosis
J. R. W. Govan and C. Doherty ............................................. 357
Isolations of *Chlamydia trachomatis* and *Ureaplasma urealyticum* from Japanese Patients with Urethritis and Efficacies of the Chemotherapy

N. Katoh *et al.* ......................................................... 359

The Flagellar Protein Determines *Campylobacter jejuni* Serotype

W. M. Wenman *et al.* .................................................. 361

The Role of Anaerobic Bacteria in Otorhinolaryngological Infections

R. Sugita *et al.* .......................................................... 363

A Quantitative Study of β-Lactamase-mediated Trapping vs Hydrolysis in Ceftazidim-resistant *Pseudomonas aeruginosa*

R. G. Hewinson *et al.* ................................................... 365

Intrinsic Penicillin Resistance in Penicillinase-producing *Neisseria gonorrhoeae*

F. Ikeda *et al.* .......................................................... 367

Studies of the Intrinsic Resistance to β-Lactams in Staphylococci and in Enterococci

K. Ubukata *et al.* .......................................................... 369

Role of an Altered Penicillin-binding Protein in Methicillin- and Cephalosporin-resistant *Staphylococcus aureus*

Y. Utsui *et al.* ............................................................. 371

Membrane Changes in Impermeability-type Streptomycin Resistance in *Pseudomonas aeruginosa*

M. Kono *et al.* ............................................................. 373

Accumulation of Tetracycline and Minocycline by *Escherichia coli*

S. Satake and H. Hashimoto ............................................. 375

Differentiation of Growth of *Pseudomonas aeruginosa* as Related to Resistance to Antibiotics

N. J. Legakis *et al.* ...................................................... 377

Mechanism of Drug Resistance to Anti-rhinovirus Agents

Y. Ninomiya *et al.* ...................................................... 379

Transformation with the Slime Produced by *Pseudomonas aeruginosa*

Y. Muto *et al.* ............................................................. 381

Genetic Transformation with Large Plasmids in *Escherichia coli*

J. T. Ou *et al.* ............................................................. 383

Curing Effect of Eleven Quinolones and Novobiocin on Ten Plasmids

V. Uccelli and Y. Michel-Briand ......................................... 385

Computer-assisted Reporting of Clinical Microbiological Data from 1981 to 1984 in Kitasato University Hospital

N. Osawa and Y. Hirata .................................................. 387

The Changing Pattern of Urinary Tract Pathogens in Egypt

M. S. Sabbour and L. M. Osman ......................................... 389

Survey of Aminoglycoside Resistance Patterns of Gram-negative Clinical Isolates

A. Velonaki and N. J. Legakis .......................................... 391

Multiply Resistant Pneumococci in the Community

K. P. Klugman and H. J. Koornhof ..................................... 393

Multiple Antibiotic Resistance in Gram-negative Bacteria Isolated from Faecally Contaminated Fresh-water Streams in Hong Kong

G. L. French and J. M. L. Ling ........................................ 395

Influence of a New Hospital on Antibiotic Resistance in Sewage Bacteria in Hong Kong

G. L. French and J. M. L. Laing ........................................ 397

Wide Geographic Dissemination of a Plasmid-mediating Multi-antibiotic Resistance

D. M. Shlaes and C. Currie-McCumber ................................ 399
A Genetic Comparison of Methicillin-resistant *Staphylococcus aureus* Isolated from Different Countries

W. B. Grubb *et al.* .................................................. 401

Changes in High-level Trimethoprim Resistance in Hospital Strains

S. G. B. Amyes *et al.* ............................................. 403

Epidemiology of High-level Resistance to Erythromycin in Intestinal Enterobacteriaceae

A. Andremont *et al.* ............................................. 405

Apparition of a Trimethoprim-Sulphonamide Plasmid-mediated Resistance in *Vibrio cholerae*

M. Jouvenot *et al.* ............................................. 407

The Formation of Multi-resistance Transposons by Directly Repeated Insertion Sequences

B. Wiedemann and J. F. Meyer .................................. 409

Substrate and Chromatofocusing Patterns of a New β-Lactamase from *Fusobacterium nucleatum*

K. Tunér *et al.* .................................................. 411

Discovery of PSE-4 β-Lactamase in Non-*Pseudomonas* Species

A. J. Reid *et al.* .................................................. 413

Inducible β-Lactamases Are Principally Responsible for the Naturally Occurring Resistance towards β-Lactam Antibiotics in *Proteus vulgaris*

W. Cullmann *et al.* .................................................. 415

The β-Lactamases of Ten Strains of *Serratia marcescens* Selected for a Synergistic Effect between Cefotiam and Cefsulodin

R. Labia *et al.* .................................................... 417

Isozymes of β-Lactamases from *Shigella sonnei*

Z. Gonzalez-Lama *et al.* ........................................ 419

Future Prospect of Resistant Bacteria to Oxime-type Cephem Antibiotics in Gram-negative Bacteria

K. Arai *et al.* ...................................................... 421

Distribution and Characterization of Different Types of β-Lactamases in Ampicillin-resistant Clinical Isolates

E. E. Stobberingh *et al.* ........................................ 423

Studies on β-Lactamases Responsible for Resistance to β-Lactam Antibiotics in Urinary Tract Infections

E. Togsverd *et al.* .................................................. 425

Inducible β-Lactamase in *Pseudomonas aeruginosa* Strains Isolated from Intensive Care Patients

G. Verschraegen *et al.* .......................................... 427

Resistance of Non-typhi *Salmonella* to β-Lactam Antibiotics

R. H. K. Eng *et al.* .................................................. 429

§2. Diagnostics and Susceptibility

A Comparison Method of Tissue Concentration by Simultaneous Administration of Two Antibiotics

K. Yoshida *et al.* .................................................. 433

Comparison of Acridine Orange and Gram Stain of Buffy Coat Smears with the Bactec System for the Rapid Detection of Bacteremia in Emergency Room Patients

P. A. Ristuccia *et al.* ............................................. 435
<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA and RIA Serum Monitoring of Aminoglycoside Antibiotics:</td>
<td>I. Nakayama et al.</td>
<td>437</td>
</tr>
<tr>
<td>Dibekacin and Amikacin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid ATB: A New System for Rapid Susceptibility Testing of Bacteria</td>
<td>J. P. Gayral et al.</td>
<td>440</td>
</tr>
<tr>
<td>Automated Susceptibility Testing of Nocardia asteroides with the</td>
<td>R. Auckenthaler et al.</td>
<td>442</td>
</tr>
<tr>
<td>Cobas-Bact Roche Instrument Compared with Agar Dilution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detection of Antibodies to Chlamydia in Sera by Means of Microplate</td>
<td>A. Matsumoto et al.</td>
<td>444</td>
</tr>
<tr>
<td>Immunofluorescent Antibody Technique (MFA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATB 32 GN: An Automated System for the Identification of Gram-negative Rods Based on Carbon Sources Utilization</td>
<td>J. P. Marcel et al.</td>
<td>446</td>
</tr>
<tr>
<td>A Simple Method for Determination of Drug-inactivating Ability of Bacteria Using Sensitivity Disc</td>
<td>Y. Kanazawa</td>
<td>448</td>
</tr>
<tr>
<td>A Simple Rapid System for Assessing the Effect of Antibiotics on the Growth Rate of Staphylococcus aureus</td>
<td>P. Wilson et al.</td>
<td>450</td>
</tr>
<tr>
<td>Automated Microbrothdilution Technique for Susceptibility Testing of Obligately Anaerobic Bacteria</td>
<td>A. C. Rodloff et al.</td>
<td>452</td>
</tr>
<tr>
<td>Comparative in vitro Activity of Methicillin, Oxacillin, Cloxacillin, Dicloxacillin, Flucloxacillin, and Cefalothin against S. aureus: Correlation with Phage-types and Penicillinase Production</td>
<td>N. Frimodt-Møller et al.</td>
<td>454</td>
</tr>
<tr>
<td>Susceptibility and β-Lactamase Productivity of Clinically Isolated Staphylococcus aureus</td>
<td>T. Nakatani et al.</td>
<td>456</td>
</tr>
<tr>
<td>The Relationship between Protein Binding and Serum Bactericidal Activity for Cefazolin, Cefonicid, and Ceftriaxone versus Staphylococcus aureus</td>
<td>D. J. Swanson et al.</td>
<td>458</td>
</tr>
<tr>
<td>Correlation between Drug Sensitivities of S. aureus and Clinical Efficacy of β-Lactam Antibiotics on Staphylococcal Infection</td>
<td>M. Sasaki et al.</td>
<td>460</td>
</tr>
<tr>
<td>Synergistic Studies on Coagulase Positive and Negative Staphylococci Using Fusidic Acid</td>
<td>O. Hammerberg and C. Gittens</td>
<td>462</td>
</tr>
<tr>
<td>In vitro Susceptibility of Oral Streptococci to Pristinamycin</td>
<td>J. P. Maskell et al.</td>
<td>464</td>
</tr>
<tr>
<td>Susceptibilities of Common Pathogenic Bacteria to Gentamicin and Seven β-Lactam Antibiotics</td>
<td>M. Kuwabara and M. Yamakido</td>
<td>466</td>
</tr>
<tr>
<td>Antibiotic Susceptibility of Salmonella typhimurium Strains Isolated from Cases of Hospital Infection</td>
<td>Ö. Ang et al.</td>
<td>468</td>
</tr>
<tr>
<td>Multiple Resistant Staphylococcus aureus at a Newly-opened University Hospital</td>
<td>M. Nasu et al.</td>
<td>470</td>
</tr>
<tr>
<td>Title</td>
<td>Authors</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Susceptibility of <em>Staphylococcus aureus</em> Isolated from the Patients with Lower Respiratory Tract Infections to Several Antibiotics</td>
<td>K. Watanabe et al.</td>
<td>472</td>
</tr>
<tr>
<td>A Study on Sensitivity of Cephem-resistant <em>Staphylococcus aureus</em> to Antibiotics and on Annual Variations of Their Phage Types</td>
<td>Y. Toyonaga et al.</td>
<td>474</td>
</tr>
<tr>
<td>Relationship between Incubation Temperature and the Inducible Resistance in Methicillin- and Cephem-resistant Staphylococci</td>
<td>N. Yamashita et al.</td>
<td>476</td>
</tr>
<tr>
<td>A Multi-centre Study of <em>in vitro</em> Activity of Clindamycin against Methicillin-resistant and Methicillin-sensitive <em>Staphylococcus</em> Strains</td>
<td>H. W. Van Landuyt</td>
<td>478</td>
</tr>
<tr>
<td><em>In vitro</em> Susceptibility of Gentamicin-resistant/Methicillin-resistant <em>Staphylococcus aureus</em> to Tobramycin and Netilmicin</td>
<td>W. D. Welch et al.</td>
<td>480</td>
</tr>
<tr>
<td>Susceptibility of <em>Streptococcus pneumoniae</em> Isolated from the Patients with Lower Respiratory Tract Infections to Several Antibiotics</td>
<td>T. Oguri et al.</td>
<td>482</td>
</tr>
<tr>
<td>Susceptibility of Enterococci to Mezlocillin in Comparison with Other Antibiotics</td>
<td>A. Speciale et al.</td>
<td>484</td>
</tr>
<tr>
<td>Medium-associated Discrepancies in Cephalosporin Susceptibility of <em>Streptococcus faecalis</em></td>
<td>Y. Mine et al.</td>
<td>486</td>
</tr>
<tr>
<td>Sensitivity of <em>Staphylococcus aureus</em> Freshly Isolated from Pediatric Patients to Methicillin and Other Antibiotics</td>
<td>K. Tabuki et al.</td>
<td>488</td>
</tr>
<tr>
<td>Susceptibility Patterns of Gram-negative Bacteria Resistant to Acylaminopenicillins and to Cefazolin</td>
<td>B. Thormählen et al.</td>
<td>490</td>
</tr>
<tr>
<td>Annual Surveillances on Antimicrobial Susceptibilities of <em>E. coli</em> and <em>Klebsiella</em> to Several Antibiotics</td>
<td>J. Igari et al.</td>
<td>492</td>
</tr>
<tr>
<td>Comparative <em>in vitro</em> and <em>in vivo</em> Studies of 14 Cephalosporins in a Mouse-peritonitis Model</td>
<td>N. Frimodt-Møller and V. Frølund Thomsen</td>
<td>494</td>
</tr>
<tr>
<td>Antimicrobial Susceptibility of <em>Escherichia coli</em> Isolated from Neonates with Sepsis and/or Meningitis</td>
<td>K. Fujita et al.</td>
<td>496</td>
</tr>
<tr>
<td>Comparative <em>in vitro</em> Activities of Ceftizoxime, Cefotaxime, Moxalactam and Cefoperazone against 100 Strains of Gentamicin-susceptible and Gentamicin-resistant <em>Serratia</em></td>
<td>C. Watanakunakorn</td>
<td>498</td>
</tr>
<tr>
<td>β-Lactam Susceptibility of Clinical Isolates of <em>Serratia marcescens</em></td>
<td>C. Quentin et al.</td>
<td>500</td>
</tr>
<tr>
<td>Survey on the Pathogens of the Urinary Tract Infections and the Change of Their Antimicrobial Susceptibility</td>
<td>J. Igari et al.</td>
<td>502</td>
</tr>
<tr>
<td><em>In vitro</em> Activity of Four Aminoglycosides against Blood Isolates of <em>P. aeruginosa</em> from Nine New York City Hospitals</td>
<td>L. du Bouchet et al.</td>
<td>504</td>
</tr>
</tbody>
</table>
G. V. Doern *et al.* .......................................................... 508

Prevalence of Drug-resistant *Haemophilus influenzae* Type b from Systemic Infections in Adelaide, South Australia, 1971 through 1980
D. Hansman ................................................................. 510

*In vitro* Activities of Cefazolin, Cefotiam, Cefmetazole, Cefsulodin and Gentamicin against *Pseudomonas aeruginosa*, *Escherichia coli*, and *Staphylococcus aureus* Isolated in 5 Areas in Japan from 1980 to 1983
T. Uete *et al.* .............................................................. 512

*In vitro* Activity of Antimicrobial Combinations against Gentamicin-resistant and Infective Endocarditis Isolates of *P. aeruginosa*
L. Saravolatz *et al.* ....................................................... 514

*In vitro* Activity of New β-Lactam Compounds against Clinically Isolated Aerobic Gram-negative Bacilli
J. H. T. Wagenvoort *et al.* .................................................. 516

*In vitro* Activity of Newer Acylaminopenicillins—Piperacillin, Mezlocillin, Azlocillin—versus Ampicillin against Gram-negative Bacteria Isolated from Intensive Care Units
R. E. Niculescu and H. Wagener ........................................... 518

Activity of Piperacillin against *Borrelia duttonii* Compared with Other β-Lactam Antibiotics
D. J. M. Wright and B. S. Azadian ........................................... 520

Comparison of Cefazolin with Cephalothin Disc Susceptibility in a Medium-Sized Community of the USA
R. B. Belshe *et al.* ......................................................... 522

*In vitro* Evaluation of Synergy Using Cefmetazole in Various Combinations against Aerobic Bacteria
K. Furness *et al.* ............................................................ 524

*In vitro* Antibacterial Activity of Four Cephamycins
J. A. Garcia-Rodriguez *et al.* .............................................. 526

*In vitro* and *in vivo* Antibacterial Activity of Astromicin
K. Sato *et al.* ............................................................... 528

Amikacin as First-line Aminoglycoside: What Happens to the Susceptibility Patterns of Aerobic Gram-negative Bacilli to the Aminoglycosides after 40 Months of Amikacin Use?
C. H. Ramirez-Ronda *et al.* ................................................. 530

*In vitro* Evaluation of Gentamicin and Netilmicin against Coagulase-negative Staphylococci
L. Steele-Moore *et al.* ....................................................... 532

*In vitro* Activity and Annual Survey of Susceptibility of Antimicrobial Agents against Pathogens Isolated from Surgical Field: Annual Survey of Susceptibility of Antimicrobial Agents
N. Shinagawa *et al.* .......................................................... 533

*In vitro* Activity and Annual Survey of Susceptibility of Antimicrobial Agents against Pathogens Isolated from Surgical Field: Frequency of Isolation of Pathogens and Background of Patients
J. Yura *et al.* ............................................................... 535
Comparative Study of Antimicrobial Agents against Causative Bacteria Isolated from Urinary Tract Infections
T. Furusawa et al. .......................................................... 537

Survey on the Pathogens of Lower Respiratory Tract Infections and the Changes of Their Susceptibility to Antibiotics in Recent Several Years
H. Ikemoto et al. .......................................................... 539

Sensitivity of Bacteraemia Strains: Paul Ehrlich Gesellschaft für Chemotherapie’s Multicenter Trial
E. J. K. Rosenthal .......................................................... 541

Susceptibility of Pseudomonas aeruginosa Isolated from the Patients with Lower Respiratory Tract Infections to Several Antibiotics
H. Tanimoto et al. .......................................................... 543

Susceptibility of Pseudomonas: Microbiological Data from Nosocomial Infections and Cystic Fibrosis
C. Jannuzzi et al. .......................................................... 545

Susceptibility of Haemophilus influenzae Isolated from the Patients with Lower Respiratory Tract Infections to Various Antibiotics
Y. Yamaguchi et al. .......................................................... 547

In vitro Susceptibility of Legionella pneumophila to 21 Antimicrobial Agents
L. P. Deforges et al. .......................................................... 549

Susceptibility of Bacteroides vulgatus to Fifteen Major Antimicrobial Agents
T. Chida et al. .......................................................... 551

Use of 8 Hr Time Kill Curve Assays in Predicting Antibiotic Synergy Using Clinically Attainable Drug Concentrations
A. Tseng, Jr. et al. .......................................................... 553

In vitro Comparison of Ampicillin-Cefotaxime and Ampicillin-Chloramphenicol Including the Zone Phenomenon Observation in 258 Haemophilus Isolates
J. R. Lapointe et al. .......................................................... 555

In vitro Synergistic Effects of Cephems and Aminoglycosides against S. marcescens, and Electron Microscopic Observation
M. Kawahara et al. .......................................................... 557

Antibacterial Activity of Piperacillin and Fosfomycin against Bacteria Isolates with Special Attention Given to Staphylococcus aureus
R. Baier and H. Puppel .......................................................... 559

Evaluation of Synergism of Antibiotic Combinations Using an in vivo Diffusion Chamber Model
A. Georgopoulos et al. .......................................................... 561

The Effect of Combination Therapy of Elemental Diet and Antimicrobial Agents for Colon Preparation
Y. Sumiyama et al. .......................................................... 564

Interaction of Piperacillin with Fosfomycin, Ceftazidime and Imipenem: Killing Curve Method
H. Puppel and R. Baier .......................................................... 566

The in vitro and in vivo Antagonisms of Combined Antimicrobial Agents against P. aeruginosa
S. Miyazaki et al. .......................................................... 568

Interaction of β-Lactams
F.-C. Stelzl et al. .......................................................... 570

In vitro Inactivation of Aminoglycosides by Cephalosporin Antibiotics
D. N. Wright et al. .......................................................... 572
Antibacterial Antagonism of β-Lactam Antibiotics in Experimental Infections
K. Kasai and S. Goto ................................................................. 574
Choice of a Primary Antibiotic Combination in Severe Staphylococcal Infections
in Pediatric Patients
E. Bingen et al. ................................................................. 576
In vitro Activity of Fosfomycin Alone and in Combination against
Methicillin-resistant Staphylococci
A. Rodriguez et al. ................................................................. 578
Bacterial Activity in vitro of Cefotiam in Combination with Netilmicin, Amikacin,
Vancomycin or Fosfomycin against Methicillin-resistant Staphylococcus aureus
J. M. Deuz et al. ................................................................. 580
Combined in vitro Activity of Fusidic Acid and Rifampicin against Methicillin-resistant
Staphylococcus aureus Strains
N. H. Melchior ................................................................. 582
In vitro Evaluation for Latamoxef/Cephalothin Synergy against Methicillin-resistant
Staphylococcus aureus in Mouse Protection Models
H. Miwa et al. ................................................................. 584
Combination Effects of Vancomycin and Rifampicin or Cloxacillin against
Methicillin-resistant Staphylococcus aureus
K. Takahashi et al. ................................................................. 586
In vitro Activity of Amikacin Combined with Ciprofloxacin, Oxacillin, and Vancomycin
against Methicillin-susceptible, -tolerant and -resistant Staphylococcus aureus
E. J. C. Goldstein and D. M. Citron ................................................................. 588
Synergistic Effect of Cefamandole and Tobramycin against Various Clinical Isolates
of Staphylococcus aureus Strains Proven by MIC, MBC and Killing Curves
A. Georgopoulos et al. ................................................................. 590
Bactericidal Mecillinam-Ampicillin Synergism against E. coli
E. Schulz and R. Marre ................................................................. 592
Synergy of a Cephalosporin-combination against E. coli
K. Dalhoff et al. ................................................................. 594
Combined Transfusion of Gamma-Globulin or Granulocytes with Antibiotics against
Pseudomonal Infection in Mice with Experimental Granulocytopenia
H. Kaneko et al. ................................................................. 596
The in vitro and in vivo Combined Effect of Cefotaxime and Fosfomycin on
Serratia marcescens
S. Aonuma et al. ................................................................. 598
Biological Aspects of the in vitro and in vivo Interaction between Fosfomycin
Tromethanol and Tobramycin
A. Visconti et al. ................................................................. 600
Pharmacokinetics and Serum Bactericidal Activity of Cefotaxime Alone or
in Combination with Tobramycin
M. G. Bergeron et al. ................................................................. 604
Increased in vitro Anti-Bacteroides Activity of Cefotaxime: Synergistic Interaction
of Cefotaxime and Desacetylcefotaxime
K. E. Aldridge and C. V. Sanders ................................................................. 606
Sensitivity of Fresh Clinical Isolates of Gram-negative and Gram-positive Bacteria
to Cefotaxime. Activity of Cefotaxime with Some Aminoglycosides on Pseudomonas
and Streptococcus Group D
J. Borowski et al. ................................................................. 608
CONTENTS  xxi

Pharmacokinetic Studies on the Concomitant Administration of β-Lactam Antibiotics in Rabbits
Y. Watanabe et al. .................................................. 610

Pharmacokinetic Studies on the Concomitant Administration of β-Lactam Antibiotics in Humans
K. Totsuka et al. .................................................. 612

Intraocular Dynamics of β-Lactam (CMX) in Combination with Aminoglycoside
M. Fukuda et al. .................................................. 614

Antibacterial Activity and Interaction of Antineoplastic Agents and Antibiotics
A. Georgopoulos et al. ............................................. 616

Intervention of Anticancer Agents in Antibacterial Activity of Antibiotics in vitro
Y. Okamoto et al. .................................................. 618

In vitro and in vivo Combination Effects of Astromicin and γ-Immunoglobulin
H. Yoneyama et al. .................................................. 620

§3. Pharmacokinetics

Correlation of Pharmacokinetic Parameters with Efficacy for Cefazolin against Staphylococcus aureus and Its Relationship to the in vivo Post-antibiotic Effect in an Animal Model
S. Gudmundsson et al. ............................................. 625

Correlation of Pharmacokinetic Parameters with Efficacy and Comparison of Cidal Activity for Ticarcillin and Cefoperazone against Gram-negative Bacilli in an Animal Model
B. Vogelman et al. .................................................. 627

Comparison of Free (Unbound) Ceftriaxone Concentrations in Experimental Meningitis with the Free (Unbound) Drug in Broth Sensitivity Testing
H. Rosin et al. .................................................. 629

An Animal Model to Study Pharmacokinetics of Antibiotics in the Small Intestine
A. K. Mandal et al. .................................................. 631

Interspecies Pharmacokinetic Modeling and Dose Selection for Experimental Animal Infections
J. Mordenti .................................................. 633

Absence of Adhesions after Intraperitoneal Antibiotic Administration in a Rat Model
P. Unthank and T. Madhavan .................................. 635

The Lung Lavage Fluid Model in the Bronchopulmonary Distribution of Antibacterial Agents
H. Vergin et al. .................................................. 638

Pharmacokinetics of a New Quinolone of the Pyrido-benzothiazine Series
A. Fravolini et al. .................................................. 640

The Novel Therapeutic Implications of Sex, Weight, Dose and Duration of Therapy upon Azlocillin’s Kinetics: A Prospective, Randomized and Cross-over Study
A. Whelton et al. .................................................. 642

Pharmacokinetics of Apalcillin
J. Gold et al. .................................................. 644

Pharmacokinetics of Cefotiam in Pediatric Patients
I. Ingrand et al. .................................................. 646

Pharmacokinetics of Cefotiam in the Elderly
A. Kishimoto et al. .................................................. 648
xxii  CONTENTS

Pharmacokinetics of Antibiotics in Elderly, Acutely Ill Patients
M. Jonsson et al. .......................................................... 650

Influence of Age on the Pharmacokinetics of Cefotaxime and Desacetylcefotaxime
H. Albin et al. .......................................................... 652

Pharmacokinetics of Cefotaxime and Desacetylcefotaxime in Ambulatory Peritoneal Dialysis
H. Albin et al. .......................................................... 654

Biliary Excretion of Cefamandole after Percutaneous Biliary Decompression in Patients with Total Common Bile Duct Obstruction
J. U. Levi et al. .......................................................... 656

The Efficacy of Choleretic Drug for Biliary Excretion of Antibiotics in Postoperative Patients with Biliary Atresia
T. Miyano et al. .......................................................... 658

In vitro Activity of Anti-Pseudomonas Agents and the Pharmacokinetic Analysis in the Cases of Chronic Bronchobronchiolitis
I. Honda et al. .......................................................... 660

Concentration of Cephamycin Series Antibiotics in Human Bone Cortex and Marrow
M. Takayanagi et al. .................................................... 662

Serum and Tissue Concentrations of Moxalactam in Gynecology
Ch. C. Carageorgiou et al. ............................................. 665

Pharmacokinetics of Ureidopenicillins in the Small Intestine: An Experimental Study
H. Thadepalli et al. ..................................................... 667

Tissue Concentrations of i.v. Sulfamethoxazole, Cefoperazone, Cefmenoxime, Cefbuperazone, and Cefoxitin in the Small Bowel Mucosa in Dogs
H. Thadepalli et al. ..................................................... 669

Vancomycin Penetration into Pericardial Fluid, Atrial Appendage, and Heart Valves
A. M. Ristuccia et al. .................................................. 671

Intracocular Penetration of Fosfomycin in Man and the Rabbit (Healthy and Infected Eye)
F. Denis et al. .......................................................... 673

Clinical Pharmacokinetics of Rifampicin and Its Metabolites after Repeated Daily Administration
U. Loos et al. .......................................................... 675

Pharmacokinetics of Salazosulfapyridine with and without Concomitant Administration of Metronidazole: Implications for Chemotherapy in Inflammatory Bowel Disease
S. W. Bender et al. ..................................................... 677

Studies on Clinical Pharmacology XIII. Influence of Antibiotics on Antiedematogenous and Antihistaminic Activities of Antiinflammatory Drugs in Simultaneous Administration
A. Fujii et al. .......................................................... 679

Levels in Aqueous Humour of Eight Relevant Antibiotics in Humans
E. Ziak et al. .......................................................... 681

Effect of Continuous Ambulatory Peritoneal Dialysis on Fosfomycin Pharmacokinetics
J. L. Bouchet et al. .................................................... 684

Dosage Optimization of Aminoglycosides Using OPT, a Computer Program Based on Bayes' Theorem and the Principle of Maximum Likelihood
J. H. T. Wagenvoort et al. ......................................... 686

The in vitro Simulated Pharmacokinetics and Antibacterial Activity: A Mathematical Model
M. Eandi et al. ........................................................ 688
The Effect of Single and Multiple Doses of Azlocillin and Netilmicin in a Pharmacokinetic Model Compared to Standard *in vitro* Methods

J. Blaser *et al.* .......................................................... 690

The Pharmacokinetics of Cefoxitin Suppositories

P. Wilson *et al.* ........................................................ 692

The Impact of Cefaclor on the Pharmacokinetics of Theophylline

L. Jauregui *et al.* ..................................................... 694

The Bioavailability Measurements of Antimicrobial Agents and Their Clinical Significance

F. Wang *et al.* .......................................................... 696

Significantly Higher Mezlocillin Tissue Levels after Intraarterial than after Intravenous Administration in Patients with Arterial Occlusive Disease

K. Amendt *et al.* ....................................................... 698

Pharmacokinetics of Oral Bacampicillin and Ampicillin in Healthy Thai Volunteers

S. Lolekha *et al.* ....................................................... 700

Ovine Pulmonary Transit of Six β-Lactam Antimicrobics

P.D. Hoeprich *et al.* .................................................. 702

Augmentation by Serrapeptase on Tissue Permeation of Cefotiam

A. Koyama ................................................................. 704

Penetration of Cefotiam and Sulbenicillin into the Respiratory Tract

M. Kato *et al.* .......................................................... 706

Hydrolysis of Bacampicillin in the Human Gastro-intestinal Tract

L. Magni and B. Ekström .............................................. 708

Comparative Studies on the Concentrations of Antibiotics in Human Serum and Oral Tissues Following a Single Oral Administration of Ampicillin, Talampicillin, Bacampicillin, and Amoxicillin

Y. Akimoto *et al.* ...................................................... 710

The Effect of Ocular Massage on Intraocular Penetration of Cefmetazole Sodium and Ciliary Body Function

M. Nonomura *et al.* ................................................... 712

Studies of Cefotaxime and Ceftriaxone Blood Concentrations during Surgery under General Anesthesia and Their Passage to the Wound Fluid after Surgery for Breast Cancer

T. Ueda *et al.* .......................................................... 714

Liver Function and Pharmacokinetic Parameters of Antibiotics in the Patients with Liver Diseases

O. Kunii *et al.* .......................................................... 716

A Pharmacokinetic Study on β-Lactam Antibiotics in the Lung by Bronchoalveolar Lavage

J. Goto *et al.* .......................................................... 718

Clinical Study of Penetration of Three Antibiotics into Cerebrospinal Fluid: Cefotaxime, Cefmenoxime, and Latamoxef

K. Kishida *et al.* ....................................................... 720

Antimicrobial Effect Kinetics under *in vitro* Conditions Simulating Pharmacokinetic Profiles

S. M. Navashin *et al.* .................................................. 722

Pharmacokinetics of Cefazolin and Ceftizoxime in Patients on Continuous Ambulatory Peritoneal Dialysis

S. Sakai *et al.* .......................................................... 724
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Authors</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Pharmacokinetic Study of Gentamicin in Rabbits with Hydronephrosis</td>
<td>I. Motoi et al.</td>
<td>726</td>
<td></td>
</tr>
<tr>
<td>Penetration of Amikacin into Simple Renal Cysts with and without Infection</td>
<td>M. Ohkawa et al.</td>
<td>728</td>
<td></td>
</tr>
<tr>
<td>A Comparison of the Biliary Elimination of Two Aminoglycosides: Amikacin and Dibekacin</td>
<td>R. Garraffo et al.</td>
<td>730</td>
<td></td>
</tr>
<tr>
<td>Subcellular Localization of Clindamycin in J774 Macrophages, Peritoneal Macrophages and Fibroblasts, Compared to Two Lysosomotropic Amines: Chloroquine and Dimethylaminopropylpenicillamide</td>
<td>A. Zenebergh et al.</td>
<td>732</td>
<td></td>
</tr>
<tr>
<td>Pharmacokinetics of Spiramycin after Single and Multiple Administration of a One-hour 500 mg i.v. Infusion in Healthy Volunteers</td>
<td>Y. Le Roux et al.</td>
<td>734</td>
<td></td>
</tr>
<tr>
<td>Pharmacokinetics, Acetylation, Hydroxylation, and Renal Excretion of Sulfatroxazole and Its 5-Hydroxy- and N4-Acetyl-metabolites in Man</td>
<td>T. B. Vree et al.</td>
<td>736</td>
<td></td>
</tr>
<tr>
<td>Pharmacokinetics of Oral Pyrazinamide</td>
<td>C. W. Park et al.</td>
<td>738</td>
<td></td>
</tr>
<tr>
<td>Pharmacokinetics and Clinical Effectiveness of Hexapen</td>
<td>H. Adamska-Dyniewska et al.</td>
<td>740</td>
<td></td>
</tr>
<tr>
<td>Bronchial Concentrations of Mezlocillin, Ampicillin, Cefotaxime, and Cefuroxime in Presence of Carboxymethylcysteine</td>
<td>F. Pirali et al.</td>
<td>742</td>
<td></td>
</tr>
<tr>
<td>Bronchial Concentration of Amikacin, Sisomicin, Cefotaxime, Cefuroxime, Ampicillin, and Tetracycline in Presence of Bromhexine</td>
<td>F. Pirali et al.</td>
<td>744</td>
<td></td>
</tr>
<tr>
<td>§4. Experimental Infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental Chemotherapy in Chronic Mycobacterium avium-intracellulare Infection of Mice</td>
<td>N. Sakurai and F. Kuze</td>
<td>749</td>
<td></td>
</tr>
<tr>
<td>Liposome-coated Antibiotic Treatment of Experimental Legionella Pneumonia in Guinea Pigs</td>
<td>H. Tanaka et al.</td>
<td>751</td>
<td></td>
</tr>
<tr>
<td>Experimental Chronic Pulmonary Infection Caused by Klebsiella pneumoniae in Mice</td>
<td>T. Nishi et al.</td>
<td>753</td>
<td></td>
</tr>
<tr>
<td>Efficacy of BMY-28142 in a Murine Model of Bronchopulmonary Infection</td>
<td>P. M. Southern, Jr.</td>
<td>755</td>
<td></td>
</tr>
<tr>
<td>Treatment of Experimental Osteomyelitis in Rabbits Caused by Tolerant Staphylococcus aureus</td>
<td>C. M. Khurana and P.A. Deddish</td>
<td>757</td>
<td></td>
</tr>
<tr>
<td>Experimental Study of Mandibular Osteomyelitis and Antibiotic Concentration in Mandibular Bone in New Zealand White Rabbits</td>
<td>H. Tsutou et al.</td>
<td>759</td>
<td></td>
</tr>
<tr>
<td>Rifampicin Compared to Fludoxacillin in Controlling Experimental Staphylococcal Infection in Rabbit Hip Arthroplasties</td>
<td>P. J. McDonald et al.</td>
<td>761</td>
<td></td>
</tr>
</tbody>
</table>
Experimental Animal Model of Surgical Wound Infection Applicable to Antibiotic Prophylaxis
  M. Lykkegaard-Nielsen and F. Moesgaard ................................. 763
Ciprofloxacin: Therapeutic Evaluation in an Experimental Subcutaneous Abscess due to Bacteroides fragilis and E. coli
  K. H. Prabhala et al. .................................................... 765
Efficacy of Ofloxacin and Ciprofloxacin, New Antimicrobial Agents of Pyridone Carboxylic Acid Derivative, on Experimental Sinusitis
  K. Ogawa et al. ............................................................ 767
Experimental Epididymitis and Prostatitis in Rabbits and Rats
  Y. Ohi et al. .............................................................. 769
Comparison of Blood Culture Techniques for Recovery of Legionella pneumophila in Experimental Bacteremia
  J. F. Reinhardt et al. ...................................................... 771
The Relevance of Protein Binding of Antimicrobial Agents to Their Therapeutic Activity, Studied in K. pneumoniae Pneumonia in Rats
  I. A. J. M. Bakker-Woudenberg et al. .................................. 773
CSF Penetration of Ceftazidime and Ampicillin Given Simultaneously
  K. Okura et al. ............................................................ 775
CSF Penetration of Aztreonam and Ampicillin Given Simultaneously
  H. Yamamoto et al. ........................................................ 777
Experimental Studies on Bacterial Prostatitis
1st Report: Pathogenicity of E. coli E-19 and the Efficacy of Various Antimicrobial Agents
  S. Arakawa et al. ......................................................... 779
Experimental Studies on Bacterial Prostatitis
2nd Report: Pathogenicity of E. faecalis 16148 and S. epidermidis 310, and Efficacy of Various Antimicrobial Agents
  K. Umezu et al. ............................................................ 781
Experimental Studies on Bacterial Prostatitis
3rd Report: Infection-induced Bladder Stone and Prostatitis
  A. Fujii et al. .............................................................. 783
Protective Effects of Astromicin in Experimental Mouse Urinary Tract Infections
  R. Okachi et al. ............................................................ 785
Comparative Efficacy of Different ß-Lactam Antibiotics and Gentamicin in Experimental Klebsiella Septicemia in Mice
  M. Trautmann et al. ....................................................... 787

§5. Immunology

Studies on the Mode of Action of a New Bacterial Immunomodulator, the Corynebacterium granulosum-derived P40 Fraction
  B. Bizzini et al. ............................................................ 791
Inosine Pranobex in the Treatment of Immunodeficiency
  T. Ginsberg et al. ........................................................ 793
The Management of Immunodepression of Diverse Etiology with the Immunostimulating Drug Inosine Pranobex
  B. O'Neill et al. ........................................................... 795
Effect of Specific Protective Immunoglobulins Extracted from Pooled Human Sera on the Treatment of Mice with Lethal Infection of Methicillin-resistant Staphylococcus aureus
Y. Ichiman et al. .................................................................................................................. 797
Modulation of Leukocyte Prostaglandin Production by Antileprosy Drugs
A. J. van Rensburg and R. Anderson .................................................................................. 799
Effect of Ampicillin and Cefotaxime on the Deposition of Complement on Salmonella enteritidis and on Its Ingestion by Human Neutrophils
M. H. Long et al. .................................................................................................................. 801
Combined Use of Antibiotics and Toxoid Made from Multiple Resistant S. aureus in Experimental Infectious Mice
Y. Ozawa et al. .................................................................................................................. 803
Correction of the Age-associated Immune Defect by Thymopentin Treatment
P. L. Meroni et al. ................................................................................................................ 805
Persistent Generalized Lymphoadenopathy in Drug Addicts: Effect of a Thymopentin Treatment
P. L. Meroni et al. ................................................................................................................ 807
Inhibition of Virus Multiplication by Macrophages Obtained from the Mice Treated with Oligopeptides and Other Agents
J. Imanishi et al. .................................................................................................................. 809
Protective Effect of Immunoactive Peptides on the Virus Infections in Mice
J. Imanishi et al. .................................................................................................................. 811
Synthetic Lauroyltetrapeptide (40 639 R.P.) Enhances Phagocytic and Bactericidal Activities of Murine and Human Macrophages or Monocytes
F. Floc’h et al. ...................................................................................................................... 813
Antiinfective and Immunoregulatory Effects of Synthetic Glycopeptides — Glucosaminylmuramyldipeptide and Muramyldipeptide
S. M. Navashin et al. .......................................................................................................... 815
Low Molecular Immunomodulators from Gram-negative Bacteria
S. M. Navashin et al. .......................................................................................................... 817
Effect of N-Acetyl-chito-oligosaccharides on Mouse Peritoneal Exudate Cells
S. Suzuki et al. .................................................................................................................... 819
Clinical Trial of a New Immunomodulator, Forphenicinol, against Chronic Respiratory Infections
N. Rikitomi et al. ................................................................................................................ 821
Protective Effect of OK-432 on Herpes Simplex Virus Infection in Mice
T. Kimura et al. .................................................................................................................... 823
Protective Effect of OK-432 against Candida Infections in Immunosuppressed Mice
K. Kojima et al. .................................................................................................................... 825
Oral Administration of OK-432 on Immune Responses in Aged Subjects without Malignancy
N. Yokoe et al. .................................................................................................................... 827
A High Resolution Cytophotometer Using a CCD Camera
R. A. Donovan and E. Goldstein ........................................................................................ 829
Luminol Chemiluminescence in the Particulate Fraction of Human Myeloid Leukemia Cell Line (HL-60) Treated with 1,25-Dihydroxyvitamin D3
R. T. Nozawa et al. ............................................................................................................ 831
An Approach to Explain the Mechanism of Immunological Side Effects of Antibiotics
G. Gillissen ......................................................................................................................... 833
Effect of Various Antibiotics against Experimental Infection at Subminimal Inhibitory Concentration
M. Ogawa et al. .............................................................. 835

Effect of Antibiotics on Phagocytosis and Bactericidal Activity of Human Leucocytes
M. Amano and H. Tanaka .................................................. 837

Cooperative Effect of Complement on Bactericidal Activities of Antibiotics
R. Kin et al. .................................................................. 839

The Effect of Subinhibitory Concentrations of Cefotaxime on the Phagocytosis and Killing of Some Bacteria by Polymorphonuclear Leucocytes
P. Jakoniuk et al. .............................................................. 841

Effects of Cefmetazole Sodium in Immunomodulation
Y. Sei et al. .................................................................. 843

Enhancement of Antibacterial Activity of Cefpimizole (AC-1370) in the Presence of Various Types of Exudate
T. Murata et al. ................................................................. 845

Effects of Cefsulodin on the Interaction of Pseudomonas aeruginosa Strains with Human Epithelial Cells and Phagocytes
G. Teti et al. .................................................................. 847

Effects of Antibiotics on Human Leukocyte Function, with Particular Reference to New Cephem Antibiotics
T. Takashima et al. ............................................................. 849

Analysis of Sub-inhibitory Effects of Monocyclic and Bicyclic β-Lactam Antibiotics on Bacterial Adherence, Phagocytosis and Intracellular Killing by Professional Phagocytic Cells
D. Delfino et al. ................................................................. 851

Influence of β-Lactam Antibiotics on the Killing of E. coli by Mouse Macrophages
M. Pawelzik and W. Opferkuch .......................................... 853

Timentin and Ticarcillin: Their Effect on Host Defense
S. V. S. Gollapudi et al. ...................................................... 855

Synergy of Bactericidal Effects of the Complement and Macrophages with Subinhibitory Concentrations of Aminoglycosides
H. Kiyota et al. ................................................................ 857

Immunostimulatory Effect of Amphotericin B on Mouse Resistance to Experimental Candida albicans Infection
A. Vecchiarelli et al. ............................................................ 859

Effect of Ofloxacin on the Hemopoietic Stem Cells and Comparison with Other Antimicrobial Agents
M. Negishi et al. ............................................................... 861

Immune Response Modifying Effect of DL-8280 (Ofloxacin)
C. De Simone et al. ............................................................ 863

The Effects of Pefloxacin on Human Mononuclear Cell Proliferation
M. A. Gougerot-Pocidalo et al. .......................................... 865

Interactions of Pefloxacin and Phagocytes
J. F. Desnottes et al. ........................................................... 867

Influence of Ciprofloxacin on Specific Interactions on Listeria-specific T Cells with Antigen in vitro
H. Hahn et al. ................................................................. 869

Effect of Ciprofloxacin on Lymphocyte and Neutrophil Function
S. V. S. Gollapudi et al. ...................................................... 871
Enoxacin-induced Modification of the Susceptibility of Bacteria to Phagocytic Killing
P. J. McDonald et al. ......................................................... 873

Contents of Antimicrobial Section 2
§ 6. Cephem Antibiotics .................................................... 875
§ 7. Penem and Penam Antibiotics ........................................ 1187
§ 8. Monobactams .......................................................... 1329
§ 9. Macrolide Antibiotics .................................................. 1403
§ 10. Quinolone Antibacterials ............................................ 1513

Contents of Antimicrobial Section 3
§ 11. Miscellaneous Antimicrobial Agents ............................. 1895
§ 12. Internal Medicine and Pediatrics .................................. 1979
§ 13. Urology ............................................................... 2185
§ 14. Surgery, Gynecology and Obstetrics ............................. 2319
§ 15. Miscellaneous Infections ........................................... 2525
§ 16. Adverse Side Effects .................................................. 2595
§ 17. Antibiotic Policy ...................................................... 2677
Workshop Summaries ................................................... 2701
Author Index .............................................................. 2793
Subject Index .............................................................. 2829
Disease/Pathogen Index .................................................. 2834
Compound Index ............................................................ 2838
Abbreviations of Antimicrobial Agents ................................ 2843