Subject Index for Volume 19

Α

Acetaldehyde

-methoxypolyethylene glycol, modification of horseradish peroxidase, effects on enzyme solubility in organic solvents, activity, and properties, 133

Acetylcholinesterase

inhibition by CHAPS (horse, human serum), 1 Acetyl-CoA carboxylase

catalysis of fluoromalonyl-CoA synthesis, 270 Acetylenes

steroidal, as mechanism-based inactivators of lanosterol 14α-demethylase, design rationale, synthesis, and characterization, 418

Acid behavior

 $C(\alpha)$ -proton transfer from thiazolium ion, analysis, 369

Acid catalysis

cleavage of 2-(1-hydroxybenzyl)thiamin, preassociation mechanism, 351

Alcohol dehydrogenase

with anti-Prelog stereospecificity yielding exclusively (R)-alcohols, detection and purification from *Pseudomonas* strain SBD6, 398

Amines

oxidation by coenzyme PQQ, mechanism, review, 169

Amino acid sequence

urease active site, review, 116

(S)-2-Amino-4-((N-haloacetyl)amino)butanoic acids

synthesis and evaluation as inhibitors of Escherichia coli glucosamine-6-phosphate synthase, 143

(S)-2-Amino-5-((N-haloacetyl)amino)pentanoic acids

synthesis and evaluation as inhibitors of Escherichia coli glucosamine-6-phosphate synthase, 143

(S)-2-Amino-3-((N-haloacetyl)amino)propanoic acids

synthesis and evaluation as inhibitors of Escherichia coli glucosamine-6-phosphate synthase, 143

(S)-2-Amino-ω-maleimidylalkanoic acids synthesis and evaluation as inhibitors of Escherichia coli glucosamine-6-phosphate synthase, 143

(S)-2-Amino-4-phenylbutanoic acid

enzyme-catalyzed asymmetric synthesis, 29 Aminopyrimidine

moiety in thiamine pyrophosphate enzymes, function, 10

Arginine

associated hydrogens, fate during streptothricin F biosynthesis, 333

side chain modification by arylglyoxals, mechanistic study: buffer and substituent effects, 229

Arylglyoxals

modification of arginine side-chain, mechanistic study: buffer and substituent effects, 229

В

Bacteria

Pseudomonas strain SBD6, detection and purification of alcohol dehydrogenase with anti-Prelog stereospecificity yielding exclusively (R)-alcohols, 398

Bacteriorhodopsin

containing retinal-20,20,20-d₃, dark adaptation, secondary β-deuterium isotope effect (*Halobacterium halobium*), 18

1-Benzyl-1,4-dihydropyridines

3-substituent, effect on complexation of NADH analogs with divalent metal ions, 433

Book review

Bioorganic Photochemistry, Vol. 1, Photochemistry and the Nucleic Acids, H. Morrison (Ed.), 1990, 225

Buffers

effects on arginine reactivity of arylglyoxals, mechanistic implications, 229

Butyrylcholinesterase, see Cholinesterase

С

Carboxyiminium

 β -lactam-derived, electron transfer features, computational studies, 314

CHAPS

inhibition of cholinesterases from various sources. 1

3-[(3-Cholamidopropyl)dimethylammonio]-1-propanesulfonate, see CHAPS

Cholinesterase

inhibition by CHAPS (Electrophorus electricus, human), 1

Cobalt

Co²⁺, complexation with NADH analogs: dependence on 3-substituent of 1-benzyl-1,4-dihydropyridines, 433

Coenzyme POO

oxidation of amines, mechanism, review, 169 Colchicinoids

stereochemistry: enantiomeric stability and binding to tubulin of desacetamidocolchicine and desacetamidoisocolchicine, 53

Complexation

NADH analogs with divalent metal ions: dependence on 3-substituent of 1-benzyl-1,4dihydropyridines, 433

Conference proceedings

Twelfth Enzyme Mechanisms Conference, 190 Conformational equilibrium

1α-[19-¹³C]hydroxyvitamin D₃ A-ring, ¹³C NMR analysis, 327

Cysteine

interactions with 5,6-dihydroxytryptamine, 274

D

Dark adaptation

bacteriorhodopsin containing retinal-20,20,20- d_3 , secondary β -deuterium isotope effect (Halobacterium halobium), 18

Desacetamidocolchicine

enantiomeric stability and binding to tubulin, 53

Desacetamidoisocolchicine

enantiomeric stability and binding to tubulin, 53

Deuterium

secondary isotope effect in dark adaptation of bacteriorhodopsin containing retinal-20,20,20-d₃ (Halobacterium halobium), 18

Dextransucrase

monosaccharide acceptor substrate specificity (Streptococcus sanguis 10558), 445

1,4-Dihydronicotinamides

hydride transfer from, merged mechanisms, 456

5,6-Dihydroxytryptamine

interactions with cysteine, 274

DNA

photochemical covalent binding of p-methoxycinnamic acid, analysis (bovine thymus), 88

Ε

Electrochemistry

oxidation of salsinol, analysis, 384

Electron transfer

by carboxyiminium derived from β -lactams, computational studies, 314

Enantiomers

desacetamidocolchicine and desacetamidoisocolchicine, stability, 53

separation, application of molecular recognition mechanisms, review, 157

Enzymes

mechanisms, structure and intermediates, substrate interactions, biological oxidations, and molecular recognition, conference proceedings, 190

Ethanal, see Acetaldehyde

 $(3\beta,32R,S)$ -32-(Ethynyl)lanost-8-en-3,32-diol

mechanism-based inactivator of lanosterol 14α-demethylase, synthesis and characterization, 418

(3β) -32-(Ethynyl)lanost-8-en-3-ol

mechanism-based inactivator of lanosterol 14α-demethylase, synthesis and characterization, 418

F

Fluoromalonyl-CoA

acetyl-CoA carboxylase-catalyzed synthesis, 270

Free energy

cAMP-dependent protein kinase reactions with synthetic substrates, linear relationships, 77

solvation of P—O, P—N, and P—C derivatives related to phosphoramide inhibitors of metallopeptidases, 152

G

Glucosamine-6-phosphate synthase

inhibitors, synthesis and evaluation (Escherichia coli), 143

Glycinamide ribonucleotide

analogs, synthesis and interactions with glycinamide ribonucleotide transformylase, 40 Glycinamide ribonucleotide transformylase interactions with glycinamide ribonucleotide analogs, analysis, 40

Н

Histidine

residues in horseradish peroxidase, chemical modification by pyrocarbonates, 66

Horseradish peroxidase

histidine residues, chemical modification by pyrocarbonates, 66

solubility in organic solvents, activity, and properties, effects of enzyme modification by ethanal-methoxypolyethylene glycol, 133

Hydride

transfer from 1,4-dihydronicotinamides, merged mechanisms, 456

Hydrogen

in arginine, fate during streptothricin F biosynthesis, 333

²H. see Deuterium

2-(1-Hydroxybenzyl)thiamin

cleavage, general acid catalysis by preassociation mechanism, 351

1α -Hydroxycholecalciferol

¹³C-labeled at position 19, synthesis and ¹³C NMR analysis of conformational equilibrium of A-ring, 327

2-(1-Hydroxyethyl)-3,4-dimethylthiazolium C(α)-proton transfer from, acid behavior, 369 (R)-2-Hydroxy-4-phenylbutanoic acid

enzyme-catalyzed asymmetric synthesis, 29

1α-Hydroxyvitamin D₃, see 1α-Hydroxycholecalciferol

ı

Imine

in penicillin, isomerization, computational studies, 314

Isomerization

penicillin imine group, computational studies, 314

Isomers

separation, application of molecular recognition mechanisms, review, 157

L

β-Lactams

derived carboxyiminium group, electron transfer features, computational studies, 314

δ-Lactate dehydrogenase

catalysis of asymmetric synthesis of (R)-2-hydroxy-4-phenylbutanoic acid (Leuconostoc mesenteroides), 29

Lanosterol 14α -demethylase

steroidal acetylenes as mechanism-based inactivators, design rationale, synthesis, and characterization, 418

М

Magnesium

Mg²⁺, complexation with NADH analogs: dependence on 3-substituent of 1-benzyl-1,4dihydropyridines, 433

Metallopeptidases

phosphoramide inhibitors, related P—O, P—N, and P—C derivatives, relative free energies of solvation, 152

p-Methoxycinnamic acid

photochemical covalent binding to calf thymus DNA, analysis, 88

Methoxypolyethylene glycol

-ethanal, modification of horseradish peroxidase, effects on enzyme solubility in organic solvents, activity, and properties,
133

Methyl-CoM reductase

mechanism of action, model studies: synthesis and redox properties of nickel pentadentate complexes, 101

Molecular recognition

enzymatic, conference proceedings, 190 in solid state, applications, review, 157

Monosaccharides

acceptor substrate specificity of dextransucrase, analysis, 445

Ν

NADH

analogs, complexation with divalent metal ions: dependence on 3-substituent of 1benzyl-1,4-dihydropyridines, 433

Nickel

pentadentate complexes, synthesis and redox properties: hypothetical mechanism for action of methyl-coenzyme M reductase, 101

in urease, removal and replacement, review, 116

Nuclear magnetic resonance

¹³C, 1α-[19-¹³C]hydroxyvitamin D₃, analysis of conformational equilibrium of A-ring, 327 0

Obituary

Toshio Goto, 226

2',5'-Oligoadenylates

2-5A trimer, biological role of middle base: analysis with uridine analogs, 283

Oxidation

amines by coenzyme PQQ, mechanism, review. 169

biological, enzyme-catalyzed, conference proceedings, 190

salsinol, electrochemical studies, 384

Oxidosqualene cyclase

inhibiting squalene analogs bearing photoreactive groups, synthesis and evaluation, 300

Ρ

Penicillin

imine group isomerization, computational studies, 314

Peptides

synthetic, reactions with cAMP-dependent protein kinase, linear free energy relationships, 77

λ-Phenylalanine dehydrogenase

catalysis of asymmetric synthesis of (S)-2amino-4-phenylbutanoic acid (Rhodococcus sp. M4), 29

3-Phosphinic acid steroids

as inhibitors of prostatic steroid 5α -reductase, species comparison and mechanistic studies (human, monkey, rat), 245

Phosphodeoxyribosemutase, see Phosphopentomutase

3-Phosphonic acid steroids

as inhibitors of prostatic steroid 5α-reductase, species comparison and mechanistic studies (human, monkey, rat), 245

Phosphopentomutase

overexpression and substrate specificity studies (Escherichia coli), 261

Phosphoramides

metallopeptidase inhibitors, related P—O, P—N, and P—C derivatives, relative free energies of solvation, 152

Phosphorylation

synthetic substrates by cAMP-dependent protein kinase, linear free energy relationships, 77

Photochemistry

covalent binding of p-methoxycinnamic acid to calf thymus DNA, 88

Photolabels

for squalene epoxidase and oxidosqualene cyclase, synthesis and evaluation, 300

Progesterone 5α-reductase

prostatic, 3-phosphinic and 3-phosphonic acid steroids as inhibitors, species comparison and mechanistic studies (human, monkey, rat), 245

Protein kinase

cAMP-dependent, reactions with synthetic substrates, linear free energy relationships, 77

Protons

 $C(\alpha)$ -, transfer from thiazolium ion, acid behavior, 369

Pyrocarbonates

chemical modification of histidine residues of horseradish peroxidase, 66

Pyruvate decarboxylase

role of aminopyrimidine moiety of thiamine pyrophosphate coenzyme (yeast), 10

Pyruvate dehydrogenase complex

role of aminopyrimidine moiety of thiamine pyrophosphate coenzyme (Escherichia coli),

R

Redox properties

nickel pentadentate complexes: hypothetical mechanism for action of methyl-coenzyme M reductase, 101

Retinal-20,20,20-d3

bacteriorhodopsin containing, dark adaptation, secondary β-deuterium isotope effect (Halobacterium halobium), 18

Ribonuclease L

binding to 2-5A trimer, role of middle base, analysis with uridine analogs, 283

s

Salsinol

oxidation, electrochemical studies, 384

host and guest compounds in, molecular recognition and assembly, review, 157

Solubility

horseradish peroxidase in organic solvents, effect of enzyme modification by ethanalmethoxypolyethylene glycol, 133

Solvation

P-O, P-N, and P-C derivatives related to

phosphoramide inhibitors of metallopeptidases, relative free energies, 152

Solvents

organic, horseradish peroxidase solubility, effect of enzyme modification by ethanalmethoxypolyethylene glycol, 133

Species differences

inhibition of prostatic steroid 5α-reductase by 3-phosphinic and 3-phosphonic acid steroids (human, monkey, rat), 245

Squalene

analogs bearing photoreactive groups, evaluation as inhibitors of squalene epoxidase and oxidosqualene cyclase, 300

Squalene epoxidase, see Squalene monooxygenase

Squalene monooxygenase

inhibiting squalene analogs bearing photoreactive groups, synthesis and evaluation, 300

Stereochemistry

alcohol dehydrogenase with anti-Prelog specificity yielding exclusively (R)-alcohols, detection and purification from *Pseudo*monas strain SBD6, 398

colchicinoids: enantiomeric stability and binding to tubulin of desacetamidocolchicine and desacetamidoisocolchicine, 53

Steroid 5α-reductase, see Progesterone 5α-reductase

Streptothricin F

biosynthesis: fate of arginine hydrogens, 333 Substituent effects

in arginine reactivity of arylglyoxals, mechanistic implications, 229

Substrate specificity

monosaccharide acceptor, in dextransucrase, analysis, 445

T

Thiamine pyrophosphate

aminopyrimidine moiety, role in binding to apoenzymes, 10

Thymidine phosphorylase

overexpression and substrate specificity studies (Escherichia coli), 261

Transketolase

role of aminopyrimidine moiety of thiamine pyrophosphate coenzyme (yeast), 10

Tubulin

binding of desacetamidocolchicine and desacetamidoisocolchicine (bovine brain), 53

U

Ultraviolet irradiation

induced covalent binding of p-methoxycinnamic acid to calf thymus DNA, analysis, 88

Urease

range of substrates, active site characterization, and removal and replacement of nickel ion in, review, 116

Uridine

substitution for adenine in 2-5A trimer, in analysis of biological role of middle base, 283

Z

Zinc

Zn²⁺, complexation with NADH analogs: dependence on 3-substituent of 1-benzyl-1,4-dihydropyridines, 433