

Subject Index for Volume 17

A

- Acetaldehyde
and derivatives, oxidation by alcohol dehydrogenase: evidence for *gem*-diol as reacting substrate (*Drosophila melanogaster*), 268
- (*Z*)- α -(Acetylamino)cinnamic acid
aryl or alkyl esters, imidazole-assisted intramolecular nucleophilic attack of amide oxygen at ester linkage, kinetics and mechanism, 159
- 2-pyridineoxime esters, metal-ion assisted intramolecular nucleophilic attack of amide oxygen at ester linkages, kinetics, 169
- L-Acetylcarnitine
in enzymatic preparation of acetyl-CoA and analogs, analysis, 1
- Acetylcholinesterase
active center, spatial orientation of *n*-alkanesulfonyl chlorides in, analysis, 79
- inhibition by alkanesulfonylchlorides, allosteric regulation by tetraalkylammonium ions (cobra), 131
- Acetyl-CoA
and analogs, preparation by enzymatic methods, 1
- Acetyl phosphate
in enzymatic preparation of acetyl-CoA and analogs, analysis, 1
- 2-Acetylpyridineketoxime (*Z*)- α -(acetylamino)-cinnamate
metal-ion assisted intramolecular nucleophilic attack of amide oxygen at ester linkages, kinetics, 169
- Adenosine
N-methyl analogs, synthesis, characterization, and comparison with nonmethylated analogs, 194
- Aerobactin
biosynthesis: mechanism of lysine:N⁶ hydroxylation (*Aerobacter aerogenes*), 13
- Alcohol dehydrogenase
catalyzed oxidoreduction in *n*-hexane-moistened glass bead system, evaluation (equine liver), 28
- oxidation of acetaldehyde and derivatives: evidence for *gem*-diol as reacting substrate (*Drosophila melanogaster*), 268
- Amines
primary and secondary, reaction with *p*-tolyl isoselenocyanate, multinuclear magnetic resonance study, 231
- Amino acids
racemic, resolution by asymmetric hydrolysis with thermitase, 275
- Aminolysis
formyl phosphate by linear and macrocyclic polyamines, 313
- 3-Androsten-3-carboxylic acid
inhibition of steroid 5 α -reductase (human), 372
- Anhydrides
mixed, of phosphoric and carboxylic acids, biological group-transfer potentials, contributions of solvent water, 486
- Ascorbic acid
mediation of imidazole ring oxidation in *N*-benzoylhistidine, 330
- Asparagine
and aspartic acid residues in lysozyme, racemization at 100°C, effect of pH, 36
- Aspartic acid
and asparagine residues in lysozyme, racemization at 100°C, effect of pH, 36
- ATP (adenosine 5'-triphosphate)
¹⁸O-labeled at β and γ positions, hydrolysis by nitrogenase, mass spectrometric analysis of produced phosphate: evidence for P _{γ} -OP _{β} bond cleavage, 377
- Azadecalins
synthesis and assay as inhibitors of oxidosqualene cyclase, 108

B

- Bacteria
Mycobacterium aurum, stereospecific hydrolysis of steroidal spiro-3 ξ -oxiranes, analysis, 53
- Bacteriorhodopsin
analog, formation from isomers of 3,7,13-trimethyl-10-isopropyl-2,4,6,8,10-tetradecapentaenal, 217

- O*-[*trans*-(α -Benzoylamino)cinnamoyl]-L-mandelate
 carboxypeptidase A-catalyzed hydrolysis, non-steady-state kinetics: evidence for productive nature of accumulating intermediate, 64
- N*-Benzoylhistidine
 imidazole ring, ascorbate-mediated oxidation, 330
- Bioluminescence
Lampteromyces japonicus, lampteroflavin as light emitter, structural analysis, 454
- Biotin
 enzyme-catalyzed ATP-dependent carboxylation involving phosphorylated tetrahedral intermediates, mechanisms, 287
- Book review
 Progress in Clinical and Biological Research, Vol. 289, Computer-Assisted Modeling of Receptor-Ligand Interactions. Theoretical Aspects and Applications to Drug Design, R. Rein and A. Golombek (Eds.), 1989, 490
- α -Bromo-4-hydroxy-3,5-dinitroacetophenone
 inhibition of erythrocyte anion transport protein, analysis (human), 96
- Butanesulfonyl chloride
 inhibition of acetylcholinesterase, allosteric regulation by tetraalkylammonium ions (cobra), 131
 spatial orientation in active center of cholinesterases, analysis, 79
- Butyrylcholinesterase, *see* Cholinesterase
- C**
- Calcium channels
 molecular tools of analysis: synthesis and evaluation of biological activity of dihydropyridine calcium entry blockers (rabbit), 141
- Captopril
 -glutathione mixed disulfide, reduction by glutathione, kinetics and equilibria, NMR study, 257
- Captopril disulfide
 reduction by glutathione, kinetics and equilibria, NMR study, 257
- Carbamyl phosphatase synthetase inhibitors
 synthesis and evaluation (*Escherichia coli*), 422
- Carbon
 isotopic, incorporation into unsaturated fatty acids: application to linoleic acid, 281
- Carboxyethyl-*o*-benzoquinone
 derivatives, intramolecular cyclization and side chain desaturation, 443
- Carboxylation
 biotin, enzyme-catalyzed ATP-dependent process involving phosphorylated tetrahedral intermediates, mechanisms, 287
- Carboxylic acids
 and phosphoric acid, mixed anhydrides of, biological group-transfer potentials, contributions of solvent water, 486
- Carboxymethyl-*o*-benzoquinone
 enzymatically-generated, transformations to 2,5,6-trihydroxybenzofuran and 3,4-dihydroxymandelic acid, analysis, 86
- Carboxypeptidase A
 hydrolysis of *O*-[*trans*-(α -benzoylamino)cinnamoyl]-L-mandelate, non-steady-state kinetics: evidence for productive nature of accumulating intermediate, 64
- Carnitine acetyltransferase
 in preparation of acetyl-CoA and analogs, analysis, 1
- Chloroacetaldehyde
 oxidation by alcohol dehydrogenase: evidence for *gem*-diol as reacting substrate (*Drosophila melanogaster*), 268
- Chlorophenyl (*Z*)- α -(acetylamino)cinnamate
 meta and para isomers, imidazole-assisted intramolecular nucleophilic attack of amide oxygen at ester linkage, kinetics and mechanism, 159
- Chlorophyll
 organic nuclei, biosynthesis: structure and function of enzymatic cofactor, review, 121
- Cholinesterase
 active center, spatial orientation of *n*-alkanesulfonyl chlorides in, analysis, 79
- Copper
 assisted intramolecular nucleophilic attack of amide oxygen at ester linkages in 2-pyridineoxime esters of (*Z*)- α -(acetylamino)cinnamic acid, kinetics, 169
- Coupling reagents
 peptide, dialkyl phosphite in dipeptide ester synthesis, analysis, 434
- Cresol
 -phosphoric acid modified solutions, pyrophosphorylation of primary hydroxyl group of (hydroxyethyl)thiamin, selectivity and application to nucleosides, 224

- Crown ethers
 capped β -cyclodextrin, synthesis and association constants of host-guest complexes, 240
- Cyclization
 intramolecular, and side chain desaturation of carboxyethyl-*o*-benzoquinone derivatives, 443
- β -Cyclodextrin
 flexibly crown ether-capped, synthesis and association constants of host-guest complexes, 240
- Cyclohexanone oxygenase
 in catalysis of Baeyer-Villiger oxidations of ketones, analysis (*Acinetobacter* NCIB 9817), 41
- Cytochromes
 organic nuclei, biosynthesis: structure and function of enzymatic cofactor, review, 121
- D**
- Desaturation
 side chain, and intramolecular cyclization of carboxyethyl-*o*-benzoquinone derivatives, 443
- Deuterium
 gram-atom percentage in D₂O, measurement by absorption spectroscopy, 308; *erratum*, 491
- Dialkyl phosphite
 as peptide coupling reagent in synthesis of dipeptide esters, analysis, 434
- 2,3-Diaminopropanoic acid, *see* 2,3-Diaminopropionic acid
- 2,3-Diaminopropionic acid
 derivatives, synthesis and evaluation as inhibitors of carbamyl phosphatase synthetase (*Escherichia coli*), 422
- Diazirine
 chromogenic, synthesis and role in spectrophotometric approach for photoaffinity labeling, 482
- α,α -Dibromo-4-hydroxy-3,5-dinitroacetophenone
 inhibition of erythrocyte anion transport protein, analysis (human), 96
- 2,2,-Dichloroethyl (Z)- α -(acetylamino)cinnamate
 imidazole-assisted intramolecular nucleophilic attack of amide oxygen at ester linkage, kinetics and mechanism, 159
- Dihydropyridine
 calcium entry blockers, synthesis and evaluation of biological activity: molecular tools of calcium channel analysis (rabbit), 141
- 3,4-Dihydroxymandelic acid
 formation from enzymatically-generated carboxymethyl-*o*-benzoquinone, analysis, 86
- 1 α ,25-Dihydroxyvitamin D₃
 22-hydroxy and 22-methoxy derivatives, synthesis and biological activities, role of side chain conformation, 294
- Dipeptide esters
 synthesis with dialkyl phosphite as peptide coupling reagent, analysis, 434
- E**
- Enzyme catalysis
 expression of kinetic isotope effects during time course of associated reactions, 177
- Ethanesulfonyl chloride
 inhibition of acetylcholinesterase, allosteric regulation by tetraalkylammonium ions (cobra), 131
 spatial orientation in active center of cholinesterases, analysis, 79
- F**
- Fatty acids
 unsaturated, carboxy-labeled, preparation method: application to linoleic acid, 281
- Flavin
 redox system, axial preference: structure and reactivity of 5-methyl-5-deazaflavino-phanes, 344
- Formyl phosphate
 hydrolysis, mechanism, 207
 reactions with linear and macrocyclic polyamines, 313
- Fungi
 Lampteromyces japonicus, bioluminescence, structure of lampteroflavin, 454
- G**
- Glass beads
 moistened, *n*-hexane system for immobilization of alcohol dehydrogenase: catalysis of oxidoreduction, evaluation (equine liver), 28
- Glutamic acid
 derivative, synthesis and evaluation as inhibitor of carbamyl phosphatase synthetase (*Escherichia coli*), 422
- Glutathione
 reduction of captopril disulfide and captopril-glutathione mixed disulfide, kinetics and equilibria, NMR study, 257

H

Heme

organic nuclei, biosynthesis: structure and function of enzymatic cofactor, review, 121

n-Hexane

-moistened glass bead system for immobilization of equine hepatic alcohol dehydrogenase: catalysis of oxidoreduction, evaluation, 28

Hydrolysis

O-[*trans*-(α -benzoylamino)cinnamoyl]-L-mandelate by carboxypeptidase A, non-steady-state kinetics: evidence for productive nature of accumulating intermediate, 64

formyl phosphate, mechanism, 207

β , γ -[^{18}O]ATP by nitrogenase, mass spectrometric analysis of produced phosphate. evidence for $\text{P}_\gamma\text{-OP}_\beta$ bond cleavage, 377
stereospecific, steroidal spiro-3 ξ -oxiranes by *Mycobacterium aurum*, analysis, 53

(Hydroxyethyl)thiamin

primary hydroxyl group, pyrophosphorylation by modified phosphoric acid-cresol solutions, selectivity and application to nucleosides, 224

Hydroxylation

lysine: N^6 , in biosynthesis of siderophore aerobactin, mechanistic study (*Aerobacter aerogenes*), 13

Hydroxymethylbilane synthase, *see* Porphobilinogen deaminase

I

Imidazole

assisted intramolecular nucleophilic attack of amide oxygen at ester linkages in aryl or alkyl esters of (*Z*)- α -(acetylamino)cinnamic acid, kinetics and mechanism, 159

Imidazole ring

in *N*-benzoylhistidine, ascorbate-mediated oxidation, 330

Isotopes

kinetic effects, expression during time course of enzyme-catalyzed reactions, 177

K

Ketones

Baeyer-Villiger oxidations, catalysis by cyclohexanone oxygenase, analysis (*Acinetobacter* NCIB 9817), 41

L

L-Lactate dehydrogenase

reactions, expression of kinetic isotope effects during time course of reaction (bovine heart), 177

regeneration of NAD from NADH for use in enzyme-catalyzed synthesis, evaluation (rabbit muscle), 400

Lampteroflavin

structural analysis and isolation as light emitter in *Lampteromyces japonicus* bioluminescence, 454

Lanosterol 14 α -demethylase

radiochemical assay for, development and analysis (rat liver), 385

Linoleic acid

incorporation of isotopic carbon, 281

Lysine

N^6 -hydroxylation in biosynthesis of siderophore aerobactin, mechanistic study, (*Aerobacter aerogenes*), 13

Lysozyme

aspartic acid and asparagine residues, racemization at 100°C, effect of pH, 36

M

Methanesulfonyl chloride

inhibition of acetylcholinesterase, allosteric regulation by tetraalkylammonium ions (cobra), 131

spatial orientation in active center of cholinesterases, analysis, 79

Methoxyacetaldehyde

oxidation by alcohol dehydrogenase: evidence for *gem*-diol as reacting substrate (*Drosophila melanogaster*), 268

5-Methyl-5-deazaflavinophanes

structure and reactivity: axial preference in flavin redox system, 344

Monophenol monooxygenase

generated carboxymethyl-*o*-benzoquinone, transformations to 2,5,6-trihydroxybenzofuran and 3,4-dihydroxymandelic acid, analysis, 86

N

NAD (nicotinamide adenine dinucleotide)

L-lactate dehydrogenase-catalyzed regeneration from NADH for use in enzyme-catalyzed synthesis, evaluation (rabbit muscle), 400

Nickel

- assisted intramolecular nucleophilic attack of amide oxygen at ester linkages in 2-pyridineoxime esters of (Z)- α -(acetylamino)-cinnamic acid, kinetics, 169

Nitrogenase (flavodoxin)

- hydrolysis of β, γ -[^{18}O]ATP, mass spectrometric analysis of produced phosphate: evidence for $\text{P}_\gamma\text{-OP}_\beta$ bond cleavage (*Azotobacter vinelandii*), 377

Nuclear magnetic resonance

- in analysis of kinetics and equilibria of captopril disulfide and captopril-glutathione mixed disulfide reduction by glutathione, 257

- ^{13}C , in characterization of pyruvate kinase-bound pyruvate, 359

- ^{13}C and ^{77}Se , *p*-tolyl isoselenocyanate reaction with primary and secondary amines, 231

Nucleosides

- direct selective pyrophosphorylation by modified phosphoric acid-cresol solutions, 224

O

Obituaries

- Myron Lee Bender, 252
- Emil Thomas Kaiser, 245

Oxidation

- ascorbate-mediated, imidazole ring in *N*-benzoylhistidine, 330

- Baeyer-Villiger, ketones, catalysis by cyclohexanone oxygenase, analysis (*Acinetobacter* NCIB 9817), 41

Oxidoreduction

- alcohol dehydrogenase-catalyzed, in *n*-hexane-moistened glass bead system, evaluation (equine liver), 28

Oxidosqualene cyclase

- azadecalin analogs of 4,4,10 β -trimethyl-*trans*-decal-3 β -ol as inhibitors, synthesis and assay, 108

P

pH

- effect on racemization of aspartic acid and asparagine residues in lysozyme, 36

Phenyl (Z)- α -(acetylamino)cinnamate

- imidazole-assisted intramolecular nucleophilic attack of amide oxygen at ester linkage, kinetics and mechanism, 159

Phosphate

- from β, γ -[^{18}O]ATP hydrolyzed by nitrogenase, mass spectrometric analysis: evidence for $\text{P}_\gamma\text{-OP}_\beta$ bond cleavage, 377

Phosphate acetyltransferase

- in preparation of acetyl-CoA and analogs, analysis, 1

Phosphoric acid

- and carboxylic acids, mixed anhydrides of, biological group-transfer potentials, contributions of solvent water, 486

- cresol modified solutions, pyrophosphorylation of primary hydroxyl group of (hydroxyethyl)thiamin, selectivity and application to nucleosides, 224

Phosphotransacetylase, *see* Phosphate acetyltransferase

Photoaffinity labeling

- spectrophotometric approach, role of chromogenic diazine, 482

Pigments

- visual, formation of analogs from isomers of 3,7,13-trimethyl-10-isopropyl-2,4,6,8,10-tetradecapentaenal and 3,7,11-trimethyl-10-isopropyl-2,4,6,8,10-dodecapentaenal, 217

Polyamines

- linear and macrocyclic, reactions with formyl phosphate, 313

Porphobilinogen deaminase

- cofactor for biosynthesis of pigments, structure and function, review, 121

Proceedings

- Eleventh Enzyme Mechanisms Conference, St. Petersburg Beach, Florida, January 1989, 461

Propanesulfonyl chloride

- inhibition of acetylcholinesterase, allosteric regulation by tetraalkylammonium ions (cobra), 131
- spatial orientation in active center of cholinesterases, analysis, 79

Proteins

- anion transporter, inhibition by α -brominated 4-hydroxy-3,5-dinitroacetophenones (human erythrocytes), 96

2-Pyridinecarboxaldoxime (Z)- α -(acetylamino)-cinnamate

- metal-ion assisted intramolecular nucleophilic attack of amide oxygen at ester linkages, kinetics, 169

Pyrophosphorylation

- primary hydroxyl group in (hydroxyethyl)-thiamin by modified phosphoric acid-cresol solutions, selectivity and application to nucleosides, 224

Pyruvate

- pyruvate kinase-bound, characterization by ^{13}C NMR spectroscopy, 359

- utilization in biosynthesis of siderophore aerobactin, relationship to lysine:N⁶ hydroxylation (*Aerobacter aerogenes*), 13
- Pyruvate kinase**
bound pyruvate, characterization by ¹³C NMR spectroscopy, 359
- R**
- Racemization**
asparagine and aspartic acid residues in lysozyme at 100°C, effect of pH, 36
- Redox system**
flavin, axial preference: structure and reactivity of 5-methyl-5-deazaflavinophanes, 344
- Reduction**
captopril disulfide and captopril-glutathione mixed disulfide by glutathione, kinetics and equilibria, NMR study, 257
- α-Retinal**
isomers and 5-substituted analogs, in study of rhodopsin binding site requirements (bovine), 410
- Rhodopsin**
binding site requirements, analysis with α-retinal isomers and 5-substituted analogs (bovine), 410
- S**
- Spectrophotometry**
for photoaffinity labeling, role of chromogenic diazirine, 482
- Spectroscopy**
absorption, measurement of gram-atom percentage of deuterium in D₂O, 308; *erratum*, 491
nuclear magnetic resonance, *see* Nuclear magnetic resonance
- Spiro[5α-androstane-3,2'-oxirane]-17β-ol**
(3*S*) and (3*R*) epimers, stereospecific hydrolysis by *Mycobacterium aurum*, analysis, 53
- Steroid 5α-reductase**
inhibition by 3-androsten-3-carboxylic acids (human), 372
- T**
- Tetraalkylammonium ions**
regulation of acetylcholinesterase inhibition by alkanesulfonylchlorides (cobra), 131
- Thermitase**
resolution of racemic amino acids by asymmetric hydrolysis, 275
- p-Tolyl isoselenocyanate**
reaction with primary and secondary amines, multinuclear magnetic resonance study, 231
- Trichloroacetaldehyde**
oxidation by alcohol dehydrogenase: evidence for *gem*-diol as reacting substrate (*Drosophila melanogaster*), 268
- 2,5,6-Trihydroxybenzofuran**
formation from enzymatically-generated carboxymethyl-*o*-benzoquinone, analysis, 86
- 4,4,10β-Trimethyl-trans-decal-3β-ol**
azadecalin analogs as oxidosqualene cyclase inhibitors, synthesis and assay, 108
- 3,7,11-Trimethyl-10-isopropyl-2,4,6,8,10-dodecapentaenal**
isomer isolation and characterization: formation of visual pigment analogs, 217
- 3,7,13-Trimethyl-10-isopropyl-2,4,6,8,10-tetradecapentaenal**
isomer isolation and characterization: formation of visual pigment and bacteriorhodopsin analogs, 217
- Tritium**
kinetic effects during time course of enzyme-catalyzed reactions, 177
- Tyrosinase**, *see* Monophenol monooxygenase
- V**
- Vitamin B₁₂**
organic nuclei, biosynthesis: structure and function of enzymatic cofactor, review, 121
- W**
- Water**
heavy, gram-atom percentage of deuterium, measurement by absorption spectroscopy, 308; *erratum*, 491
solvent, contributions to biological group-transfer potentials: mixed anhydrides of phosphoric and carboxylic acids, 486
- Z**
- Zinc**
assisted intramolecular nucleophilic attack of amide oxygen at ester linkages in 2-pyridineoxime esters of (*Z*)-α-(acetylamino)-cinnamic acid, kinetics, 169