Subject Index for Volume 18

A

Acetylcholine

hydrolysis, cholinesterase-catalyzed, salt effects, 13

Acetylcholinesterase

catalyzed acetylcholine hydrolysis, salt effects, 13

Acetyl-CoA

recycling in two-phase system, in enzyme-catalyzed synthesis of citric acid, 131

Acidity

amino acid side chains, theoretical study, 361 Acyl-chymotrypsin

deacylation, kinetic salting effect, review, 228 Acyl-CoA dehydrogenase

reaction with thioesters of (methylenecyclopropyl)acetic and β-(cyclopropylidene) propionic acids, analysis (porcine kidney), 221

Acyl dehydrogenase, see Acyl-CoA dehydrogenase

ADPβS [adenosine 5'-(2-thiodiphosphate)] solvolysis, effects of solvents, 373

Aldehyde dehydrogenase

reaction with 4-chloroacetylpyridine adenine dinucleotide, formation of chromophoric species, 91

Amides

Co(III) chelated, hydrolysis, catalysis by internal phosphonic acid group, 63

Amines

primary and secondary, stepwise reversible blocking in synthesis of polyethyleneimine derivatives, 413

D-Amino acid oxidase

catalysis of putrescine-glyoxylate adduct oxidation to 2-carboxy-4,5,6,7-tetrahydro-1,3-diazepine, 41

Amino acids

 α-(benzoylamino)cinnamoyl derivatives, carboxypeptidase A-catalyzed hydrolysis, kinetics, 276

side chains, acidic strength, theoretical study,

5-Aminolevulinate

multiple forms in aqueous solution, identification by NMR, 381

Ammonium ion

acidic properties in gas phase, theoretical study, 361

Anabaseine

cholinergic, hydrolysis: effects of cosolvents on position of ring-chain equilibrium, 395 Azaparacyclophane

carbon-skeleton rearrangements, catalysis by hydrophobic vitamin B₁₂ (octopus), 49

В

Benzodiazepine receptors

central, conformational recognition, I

Book reviews

Biotransformations in Preparative Organic Chemistry, The Use of Isolated Enzymes and Whole Cell Systems in Synthesis, H. G. Davies et al., 1989, 251

Calixarenes, C. D. Gutsche (Monographs in Supramolecular Chemistry, J. F. Stoddart, Series Ed.), 1989, 457

Butyrylcholinesterase, see Cholinesterase

C

Carbon-skeleton rearrangements

azaparacyclophane, catalysis by hydrophobic vitamin B_{12} , 49

Carboxylate anion

and metal ion, bifunctional catalysis in hydrolysis of akyl ester and alkyl amide in dimethyl sulfoxide: carboxypeptidase A model, 207

Carboxypeptidase A

catalyzed hydrolysis of α -(benzoylamino)cinnamoyl derivatives of amino acids, kinetics, 276

model reactions: bifunctional catalysis by metal ion and carboxylate anion in hydrolysis of alkyl ester and alkyl amide in dimethyl sulfoxide, 207

model studies, review, 345

2-Carboxy-4,5,6,7-tetrahydro-1,3-diazepine formation from D-amino acid oxidase-catalyzed oxidation of putrescine-glyoxylate adduct, 41

Cations

transport by modified dibenzo-18-crown-6 through lecithin liposomal membrane, 283

4-Chloroacetylpyridine adenine dinucleotide

reactions with reduced glutathione and aldehyde dehydrogenase, formation of chromophoric species, 91

Cholinesterase

catalyzed acetylcholine hydrolysis, salt effects, 13

Chromatography

aqueous cation-exchange, in purification of racemic 2-(1-hydroxyethyl)thiamine, 425

Chromophores

configuration, retention in rhodopsin isomers derived from *dicis* retinal isomers. 30

formation from 4-chloroacetylpyridine adenine dinucleotide reactions with reduced glutathione and aldehyde dehydrogenase, 91

Citric acid

enzyme-catalyzed synthesis with acetyl-CoA recycling in two-phase system, 131

Cobalt

Co(III) chelated amide, hydrolysis, catalysis by internal phosphonic acid group, 63 Conformational recognition

by central benzodiazepine receptors, analysis. I

Copper

ionic, and carboxylate anion, bifunctional catalysis in hydrolysis of akyl ester and alkyl amide in dimethyl sulfoxide: carboxypeptidase A model, 207

β-(Cyclopropylidene)propionic acid

thioester, reactions with lithium diisopropylamide and renal acyl dehydrogenase, 221

Cytochrome P450

IIE1, inhibition by dihydrocapsaicin, mechanism, 185

model systems, mechanistic studies and selective catalysis, review, 440

D

Deacylation

acyl-chymotrypsin, kinetic salting effect, review, 228

Dibenzo-18-crown-6

modified, cation transport through lecithin liposomal membrane, 283 (Difluoromethyl)aryl-β-D-glucoside

ortho and para isomers, enzyme-activated irreversible inhibitor of β -glucosidase, stereoselective preparation, 330

Dihydrocapsaicin

inhibition of cytochrome P450IIE1, mechanism, 185

1α,25-Dihydroxyvitamin D₃

conformational analysis by NMR, 19

N,N-Dimethyl-2-carboxy-6-(2-imidazoleazo)benzamide

hydrolysis in dimethyl sulfoxide, bifunctional catalysis by metal ion and carboxylate anion: carboxypeptidase A model, 207

N,N-Dimethylformamide

alone or mixed with water, effects on solvolysis of ADPBS, 373

Dimethyl sulfoxide

alkyl ester and alkyl amide hydrolysis in, bifunctional catalysis by metal ion and carboxylate anion: carboxypeptidase A model, 207

alone or mixed with water or methanol, effects on position of ring-chain equilibrium in cholinergic anabaseine and N-methylanabaseine, 395

Dioleoylthiophosphatidylcholine

synthesis and use in analysis of lecithin-cholesterol acyltransferase stereospecificity, 179

1,2-Dipalmitoyl-sn-glycero-3-thiophospho-L-serine

synthesis and configurational assignment, 78

\mathbf{E}

Enzyme reactions

in citric acid synthesis, associated recycling of acetyl-CoA in two-phase system, 131

cytochrome P450 model systems, mechanistic studies and selective catalysis, review, 440

hydrogen tunneling in, detection, and calculations of intrinsic isotope effects, 435

Epoxidation

cytochrome P450-catalyzed, mechanistic studies with P450 model systems, review, 440

Esters

synthesis in ethanol, catalysis by subtilisins Carlsberg and BPN': comparative activities and effects of immobilization, 107

Ethanol

ester synthesis and transesterification in, catalysis by subtilisins Carlsberg and BPN': comparative activities and effects of immobilization, 107

F

Formic acid

acidic properties in gas phase, theoretical study, 361

G

B-Glucosidase

enzyme-activated irreversible inhibitors, stereoselective preparation, 330

Glutamate-ammonia ligase

interaction with cyclic analogs of phosphinothricin, characterization, 154

Glutamine synthetase, see Glutamate-ammonia ligase

Glutathione

reaction with

4-chloroacetylpyridine adenine dinucleotide, formation of chromophoric species, 91 tryptamine-4,5-dione, 253

Glyoxylate

-putrescine adduct, oxidation to 2-carboxy-4,5,6,7-tetrahydro-1,3-diazepine, catalysis by D-amino acid oxidase, 41

Н

Hydrogen sulfide

acidic properties in gas phase, theoretical study, 361

Hydrogen tunneling

detection in enzyme-catalyzed reactions and calculations of intrinsic isotope effects, 435

Hydrolysis

acetylcholine, cholinesterase-catalyzed, salt effects, 13

alkyl ester and alkyl amide, bifunctional catalysis by metal ion and carboxylate anion in dimethyl sulfoxide: carboxypeptidase A model, 207

 α-(benzoylamino)cinnamoyl derivatives of amino acids, carboxypeptidase A-catalyzed, kinetics, 276

cholinergic anabaseine and N-methylanabaseine: effects of cosolvents on position of ring-chain equilibrium, 395

Co(III) chelated amide, catalysis by internal phosphonic acid group, 63

O-isopropyl t-butylphosphonofluoridate by parallel paths for nucleophilic displacement, 160; erratum, 458

2-(1-Hvdroxvethvl)thiamine

diastereomeric salts, differentiation and analy-

sis of stereochemical requirements in pyruvate decarboxylase, 136

racemic, synthesis and purification, 425

Hydroxylation

cytochrome P450-catalyzed, mechanistic studies with P450 model systems, review, 440

5-Hydroxytryptamine, see Serotonin

L-β-Hydroxyvaline

synthesis from α-keto-β-hydroxyisovalerate with leucine dehydrogenase derived from Bacillus sp., 116

I

Immobilization

subtilisin BPN' for catalysis of ester synthesis and transesterification in ethanol, comparison, 107

O-Isopropyl t-butylphosphonofluoridate

hydrolysis by parallel paths for nucleophilic displacement, analysis, 160; erratum, 458 Isotope effects

otope effects

intrinsic, calculations, and detection of hydrogen tunneling in enzyme-catalyzed reactions, 435

K

α -Keto- β -hydroxyisovalerate

hydrolysis to L-β-hydroxyvaline by leucine dehydrogenase derived from *Bacillus* sp., 116

L

Lecithin-cholesterol acyltransferase, see Phosphatidylcholine-sterol acyltransferase

Leucine dehydrogenase

in synthesis of L- β -hydroxyvaline from α -keto- β -hydroxyisovalerate (*Bacillus* sp.), 116

Liposomes

lecithin-based, associated cation transport by modified dibenzo-18-crown-6, 283

Lithium diisopropylamide

reaction with thioesters of (methylenecyclopropyl)acetic and β-(cyclopropylidene) propionic acids, analysis, 221

Lysine

Boc-protected derivatives, Michael addition to α -methylene- γ -butyrolactones, stereochemistry, 199

M

Melanir

biosynthesis, role of stable quinone methide

formation during tyrosinase-catalyzed oxidation of α -methyl dopa methyl ester, 144

Membranes

liposomal, lecithin-based, associated cation transport by modified dibenzo-18-crown-6, 283

Methanol

alone or mixed with water or dimethyl sulfoxide, effects on position of ring-chain equilibrium in cholinergic anabaseine and *N*-methylanabaseine, 395

N-Methylanabaseine

cholinergic, hydrolysis: effects of cosolvents on position of ring-chain equilibrium, 395

Methyl 2-carboxy-6-(2-imidazoleazo)benzoate

hydrolysis in dimethyl sulfoxide, bifunctional catalysis by metal ion and carboxylate anion: carboxypeptidase A model, 207

α-Methyl dopa methyl ester

tyrosinase-catalyzed oxidation, associated formation of stable quinone methide and implication for melanin biosynthesis, 144

α-Methylene-γ-butyrolactones

Michael addition of Boc-protected lysine derivatives, stereochemistry, 199

(Methylenecyclopropyl)acetic acid

thioester, reactions with lithium diisopropylamide and renal acyl dehydrogenase, 221

1-Methyl-2-nitrosoimidazole

reduction potential, relationship to physiological activity, comparison with nitro precursors, 265

Michael addition

Boc-protected lysine derivatives to α-methylene-γ-butyrolactones, stereochemistry, 199

Models

carboxypeptidase A

associated reactions: bifunctional catalysis by metal ion and carboxylate anion in hydrolysis of alkyl ester and alkyl amide in dimethyl sulfoxide, 207

various studies, review, 345

cytochrome P450, mechanistic studies and selective catalysis, review, 440

N

Nickel

ionic, and carboxylate anion, bifunctional catalysis in hydrolysis of akyl ester and alkyl amide in dimethyl sulfoxide: carboxypeptidase A model, 207

Nitrosobenzenes

substituted, reduction potential, relationship to

physiological activity, comparison with nitro precursors, 265

1-Nitrosopyrene

reduction potential, relationship to physiological activity, comparison with nitro precursors. 265

NMR, see Nuclear magnetic resonance

Nuclear magnetic resonance

5-aminolevulinate, identification of multiple forms in aqueous solution, 381

 $1\alpha,25$ -dihydroxyvitamin D_3 , conformational analysis, 19

Nucleophilic displacement

in O-isopropyl t-butylphosphonofluoridate hydrolysis, parallel paths, 160; erratum, 458

0

Orotate phosphoribosyltransferase

inhibition by stable and nonmetabolizable C-glycosylphosphonyl analogs of 5-phosphorylribose 1-α-diphosphate, 165

Oxidation

electrochemical, 5-hydroxytryptamine in aqueous solution at physiological pH, 291

α-methyl dopa methyl ester, tyrosinase-catalyzed, associated formation of stable quinone methide, implication for melanin biosynthesis, 144

putrescine-glyoxylate adduct to 2-carboxy-4,5,6,7-tetrahydro-1,3-diazepine, catalysis by p-amino acid oxidase, 41

spermine and spermidine, pK_a of products, masking by ring-chain tautomeric equilibrium, 85

P

pΗ

physiological, effect on electrochemical oxidation of 5-hydroxytryptamine in aqueous solution, 291

Phosphatidylcholine-sterol acyltransferase stereospecificity in enzyme-substrate recognition, 179

Phosphatidylserine

phosphorothioate analogs, synthesis and configurational assignment, 78

Phosphinothricin

cyclic analogs, synthesis and interaction with glutamine synthetase, 154

Phospholipids

chiral at phosphorus

synthesis and configurational assignment of phosphorothicate analogs of phosphatidylserine, 78 synthesis of dioleoylthiophosphatidylcholine and stereospecificity of lecithin-cholesterol acyltransferase, 179

Phosphonic acid, see Phosphorous acid Phosphorothioate

analogs of phosphatidylserine, synthesis and configurational assignment, 78

Phosphorous acid

as internal cocatalyst in hydrolysis of Co(III) chelated amide, evaluation, 63

5-Phosphorylribose 1-α-diphosphate

stable and nonmetabolizable C-glycosylphosphonyl analogs, synthesis and inhibition of orotate phosphoribosyltransferase, 165

 pK_a

spermine and spermidine oxidation products, masking by ring-chain tautomeric equilibrium, 85

Polyethyleneimine

derivatives, synthesis by stepwise reversible blocking of primary and secondary amines, 413

Proteases

Streptomyces griseus, interaction with fluorescence-labeled Streptomyces subtilisin inhibitor, analysis, 318

Putrescine

-glyoxylate adduct, oxidation to 2-carboxy-4,5,6,7-tetrahydro-1,3-diazepine, catalysis by D-amino acid oxidase, 41

Pyruvate decarboxylase

stereochemical requirements, analysis through differentiation of diastereomeric salts of hydroxyethyl(thiamin), 136

Q

Quinone methide

stable, formation during tyrosinase-catalyzed oxidation of α -methyl dopa methyl ester, implication for melanin biosynthesis, 144

R

Recycling

acetyl-CoA in two-phase system, in enzymecatalyzed synthesis of citric acid, 131

Reduction potential

benzenoid and heterocyclic nitroso compounds, relationship to physiological activities: comparison with nitro precursors, 265

Retinal

dicis isomers, derived rhodopsin isomers, retention of chromophore configuration, 30

Rhodopsin

isomers derived from *dicis* retinal isomers, retention of chromophore configuration, 30

Ring-chain equilibrium

position in cholinergic anabaseine and Nmethylanabaseine, effects of cosolvents, 395

tautomeric, masking of oxidation product pK_a of spermine and spermidine, 85

S

Salting effect

kinetic, as tool in analysis of enzymatic reactions: deacylation of acyl-chymotrypsins, review, 228

Salts

effects on cholinesterase-catalyzed acetylcholine hydrolysis, 13

hydroxyethyl(thiamin), diastereomeric, differentiation and analysis of stereochemical requirements in pyruvate decarboxylase, 136

Serotonin

electrochemical oxidation in aqueous solution at physiological pH, 291

Solvolysis

ADP β S, effects of solvents, 373

Spermidine

oxidation product pK_a , masking by ring-chain tautomeric equilibrium, 85

Spermine

oxidation product pK_a , masking by ring-chain tautomeric equilibrium, 85

Stereochemistry

Michael addition of Boc-protected lysine derivatives to α-methylene-γ-butyrolactones, 199

Stereospecificity

lecithin-cholesterol acyltransferase, analysis, 179

Subtilisins

BPN' and Carlsberg, catalysis of ester synthesis and transesterification in ethanol, comparative activities and immobilization-activation, 107

interaction with fluorescence-labeled Streptomyces subtilisin inhibitor, analysis, 318

 \mathbf{T}

Thioesters

(methylenecyclopropyl)acetic and β -(cyclopropylidene)propionic acids, reactions with

lithium diisopropylamide and renal acyl dehydrogenase, 221

Transesterification

in ethanol, catalysis by subtilisins Carlsberg and BPN': comparative activities and effects of immobilization, 107

Tryptamine-4,5-dione

properties and reaction with glutathione, 253 Tunneling

hydrogen, see Hydrogen tunneling

Tyrosinase

catalyzed oxidation of α -methyl dopa methyl ester, associated formation of stable quinone methide, implication for melanin biosynthesis, 144

Vitamin B₁₂

hydrophobic, catalysis of carbon-skeleton rearrangements in azaparacyclophane, 49

W

Water

alone or mixed with

N.N-dimethylformamide, effects on solvolysis of ADPBS, 373

methanol or dimethyl sulfoxide, effects on position of ring-chain equilibrium in cholinergic anabaseine and N-methylanabaseine, 395

Statement of ownership, management, and circulation required by the Act of October 23, 1962, Section 4369, Title 39, United States Code: of

BIOORGANIC CHEMISTRY

Published quarterly by Academic Press, Inc., I East First Street, Duluth, MN 55802. Number of issues published annually: 4. Editor: Dr. Gordon A. Hamilton, Department of Chemistry, 132 Davey Lab., Penn State University, University Park, PA 16802.

4. Editori Dr. Gordon A. Hamilton, Department of Chemistry, 132 Davey Lab., Penn State University, University Park, PA 16802.

Owned by Academic Press, Inc., 1230 Sixth Avenue, San Diego, CA 92101. Known bondholders, mortgagees, and other security holders owning or holding I percent or more of total amount of bonds, mortgages, and other securities None. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other lifuciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. Names and addresses of individuals who are stockholders of a corporation which listed is a stockholder or holder of bonds, mortgages, or other securities of the publishing corporation have been included in paragraphs 2 and 3 when the interests of such individuals are equivalent to 1 percent or more of the total amount of the stock or securities of the publishing corporation.

Total no. copies printed average no. copies each issue during preceding 12 months: 1033; single issue nearest to filling date: 0.79, ed.) Sales through agents, news dealers, or otherwise: average no. copies each issue during preceding 12 months: 67; single issue nearest to filling date: 0.7 rece distribution by mall, carrier delivery, or by other means: average no. copies each issue during preceding 12 months: 67; single issue nearest to filling date: 0.7 rece distributed: average no. copies each issue during preceding 12 months: 741; single issue nearest to filling date: 0.7 rece distributed: average no. copies each issue during preceding 12 months: 741; single issue nearest to filling date: 0.7 rece

(Signed) Evelyn Sasmor, Senior Vice President

11 - 1