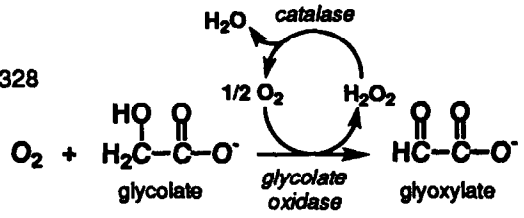
BioMed. Chem. **1994**, *2*, 371

Glyoxylic Acid Production Using Immobilized Glycolate Oxidase and Catalase

John E. Seip, Susan K. Fager, John E. Gavagan, David L. Anton, and Robert Di Cosimo*
CR&D Dept., E. I. du Pont de Nemours & Co., Experimental Station, PO Box 80328, Wilmington, DE 19880-0328

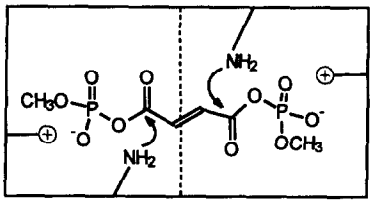
A variety of enzyme immobilization methods have been examined for the preparation of a catalyst for the oxidation of glycolic acid to glyoxylic acid in 99 % yield.



BioMed. Chem. **1994**, *2*, 379

INACTIVATION OF D-3-HYDROXYBUTYRATE DEHYDROGENASE BY FUMAROYL BIS(METHYL PHOSPHATE, Ronald Kluger* and Stephen Bearne, *Department of Chemistry, University of Toronto, Toronto, Canada M5S 1A1*

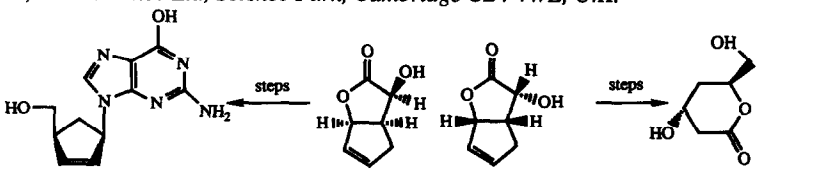
Abstract: Fumaroyl bis(methyl phosphate) inactivates D-3-hydroxybutyrate dehydrogenase while cross-linking the two subunits of the enzyme.



BioMed. Chem. **1994**, *2*, 387

Enzyme-Catalysed Kinetic Resolution of 4-*endo*-Hydroxy-2-oxabicyclo[3.3.0]-oct-7-ene-3-one and Employment of the Pure Enantiomers for the Synthesis of Anti-viral and Hypocholestemic Agents.

R. A. MacKeith, R. McCague, H. F. Olivo, S. M. Roberts, S. J. C. Taylor and H. Xiong
[a]*Department of Chemistry, Exeter University, Exeter, Devon EX4 4QD, U.K.*
[b]*Research Division, Chiroscience Ltd, Science Park, Cambridge CB4 4WE, U.K.*

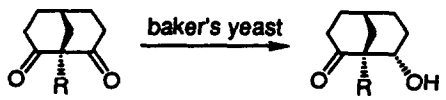


BioMed. Chem. **1994**, *2*, 395

Reduction of Bicyclo[3.3.1]nonane-2,8,-diones with Baker's Yeast

Kenji Mori,*[a] Shuichi Takayama[a] and Masaru Kido[b]
[a]Department of Agricultural Chemistry, The University of Tokyo, Yayoi 1-1-1,Bunkyo-ku, Tokyo 113, Japan
[b]Analytical Chemistry Laboratory, 2nd Tokushima Institute of New Drug Research, Otsuka Pharmaceutical Co., Ltd., Kawauchi,Tokushima 771-01, Japan

Reduction of bicyclo[3.3.1]nonane-2,8-dione(**1**) and its homologues **2** and **3** with baker's yeast affords (1*R*, 5*S*, 8*S*)-8-hydroxybicyclo[3.3.1]nonan-2-one (**4**) and its homologues **5** and **6**.



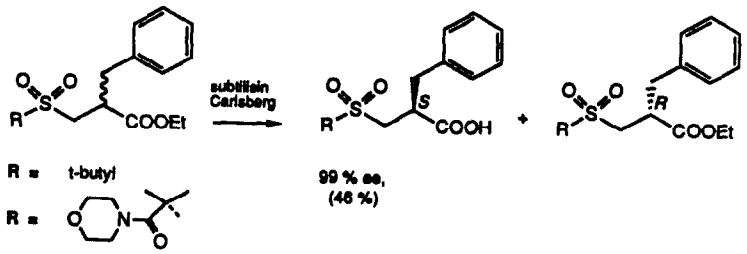
1 R = H
2 R = Me
3 R = $CH_2CH{=}CH_2$
4 R = H
5 R = Me
6 R = $CH_2CH{=}CH_2$

BioMed. Chem. **1994**, *2*, 403

Large Scale Preparation of Chiral Building Blocks for P_3 Site of Renin Inhibitors

S. Doswald, H. Esterman, E. Kupfer, H. Stadler, W. Walther, T. Weisbrod, B. Wirz*, W. Wostl

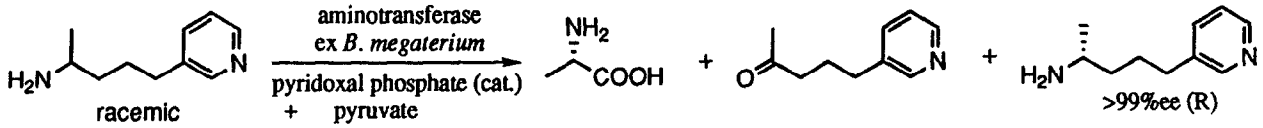
Pharma Research, New Technologies, [a]Dept. of Microbiology or [d]Physics; Pharma Operations, Manufacturing, [b]Chemical Production or [e]Process Development; [c]Pharma Research, Cardiovascular Diseases; F. Hoffman-La Roche Ltd, 4002 Basel, Switzerland



BioMed. Chem. **1994**, *2*, 411

AMINOTRANSFERASE CATALYSIS APPLIED TO THE SYNTHESIS OF A PAF ANTAGONIST

David L. Coffen, Masami Okabe, Ruen Chu Sun, Seoju Lee and George W. J. Matcham,
Roche Research Center, Hoffmann-La Roche Inc., Nutley, NJ 07110
Celgene Corporation, Warren, NJ 07059

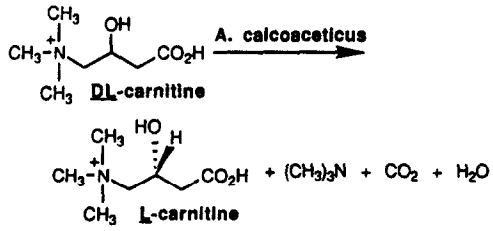


BioMed. Chem. **1994**, *2*, 415

L-CARNITINE VIA ENZYME-CATALYZED OXIDATIVE KINETIC RESOLUTION.

Dennis Ditullio, David Anderson, Ching-Shih Chen, and Charles J. Sih*
School of Pharmacy, University of Wisconsin, Madison, WI 53706 U.S.A.

L-Carnitine of high optical purity was prepared via kinetic resolution using a mutant strain of *Acinetobacter calcoaceticus* ATCC 39647. This organism preferentially metabolized the D-enantiomer of the racemate to furnish L-carnitine. Recovery of L-carnitine was 93%, providing a total weight yield of 46.5% in 92% enantiomeric excess. The mode of degradation of carnitine was shown to proceed via a monooxygenase-catalyzed oxidative cleavage resulting in the formation of trimethylamine and malic acid.

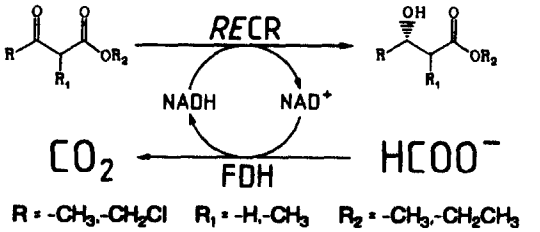


BioMed. Chem. **1994**, *2*, 421

A KINETIC STUDY AND APPLICATION OF A NOVEL CARBONYL REDUCTASE ISOLATED FROM *RHODOCOCCUS ERYTHROPOLIS*

Thomas Zelinski and Maria-Regina Kula
Institut für Enzymtechnologie der
Heinrich-Heine-Universität Düsseldorf,
KFA Jülich, PO Box 2050, 52404 Jülich, FRG

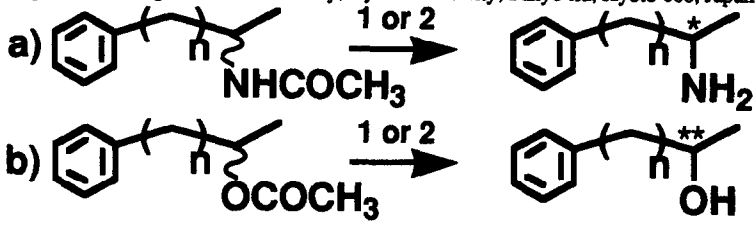
Summary: **A NADH-dependent Carbonyl Reductase which reduce a broad range of carbonyl compounds to (S)-hydroxy compounds. Application of the enzyme in preparative synthesis of 3-hydroxyacid esters.**



BioMed. Chem. **1994**, *2*, 429

Enzymatic asymmetric synthesis of α-methyl arylalkylamines and α-methyl arylalkylalcohols by arylalkyl acylamidases.

Jun Ogawa, Sakayu Shimizu and Hideaki Yamada,
Department of Agricultural Chemistry, Kyoto University, Sakyo-ku, Kyoto 606, Japan

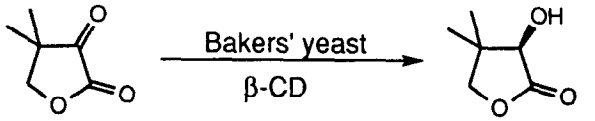


1) ***Pseudomonas putida*** **Sc2 AKU 881**
   a, n = 2, 95% e.e. for (*R*)*
   b, n = 1, 99% e.e. for (*S*)**
2) ***Cellulomonas fimi*** **AKU 671**
   a, n = 0, 99% e.e. for (*S*)*
   n = 2, 99% e.e. for (*S*)*
   b, n = 2, 94% e.e. for (*S*)**

BioMed. Chem. **1994**, *2*, 433

EFFECT OF CYCLODEXTRIN ON IMPROVEMENT OF ENANTIOSELECTIVITY IN THE REDUCTION OF KETO-PANTOLACTONE WITH BAKERS' YEAST

Kaoru Nakamura, Shin-ichi Kondo, Atsuyoshi Ohno*
Institute for Chemical Research, Kyoto University, Uji, Kyoto 611, Japan



Ketopantolactone (*R*)-pantolactone

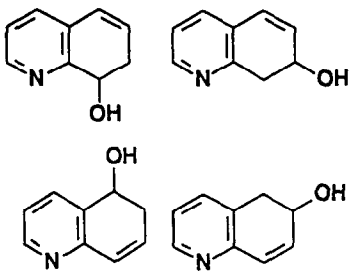
Addition of β-cyclodextrin improves enantio-selectivity in the reduction of ketopantolactone mediated by bakers' yeast.

BioMed. Chem. **1994**, *2*, 439

CHEMICAL AND ENZYME-CATALYSED SYNTHESIS OF QUINOLINE HYDRATES.

R.Agarwal,D.R.Boyd,N.D.Sharma,R.A.S.McMordie, and H.P.Porter,
School of Chemistry, The Queen's University of Belfast, Belfast BT95AG, UK.
B.van Ommen, and P.J. van Bladeren,
Department of Biological Toxicology,TNO Toxicology and Nutrition Institute,P.O.Box360, 3700 AJ Zeist, The Netherlands.

Four arene hydrates of quinoline have been synthesised by chemical and enzyme-catalysed (fungal and animal) methods.

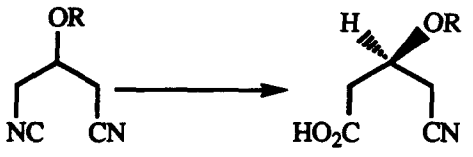


BioMed. Chem. **1994**, *2*, 447

Microbial Hydrolysis of Glutatonitrile Derivatives with *Brevibacterium* Sp R312

A. Kerridge, J. S. Parratt, S. M. Roberts, F. Thiel, N. J. Turner and A. J. Willetts
[a]Department of Biological Sciences, University of Exeter, Exeter, Devon EX4 4QG, U.K. [b]Department of Chemistry, University of Exeter, Exeter,Devon EX4 4QD, U.K. [c]Zentrum für Selektive Organische Synthese, Rudower Chaussee 5, D-12484-Berlin-Adlershof, Germany

The mechanism of conversion of dinitriles (A) into cyanoacids (B) using *Brevibacterium* R312 is discussed.



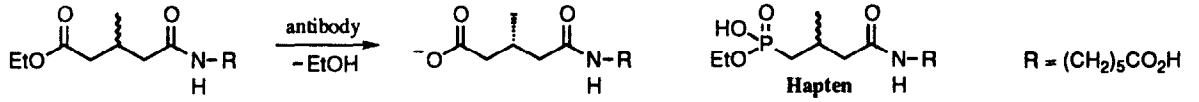
(A) **(B)**

BioMed. Chem. **1994**, *2*, 457

CHARACTERIZATION OF A CATALYTIC ANTIBODY FOR STEREOSELECTIVE ESTER HYDROLYSIS
-A CATALYTIC RESIDUE AND MODE OF PRODUCT INHIBITION-

Takuji Nakatani[1], Jun Hiratake[1], Akihiro Shinzaki[2], Ritsuko Umeshita[1], Tadao Suzuki[2], Hiroshi Nakajima[2], and Junichi Oda[1,*]
[1]Institute for Chemical Research, Kyoto University [2]Biochemistry Department, R&D Center, Unitika, Ltd. Uji, Kyoto 611, Japan

An esterolytic antibody was generated and characterized in terms of kinetic behavior, stereoselectivity, catalytic residue, and product inhibition. A keyrole of a catalytic Arg in product inhibition is noted.



BioMed. Chem. **1994**, *2*, 469

Effect of Conformation of the Substrate on Enzymatic Decarboxylation of α-Arylmalonic Acid

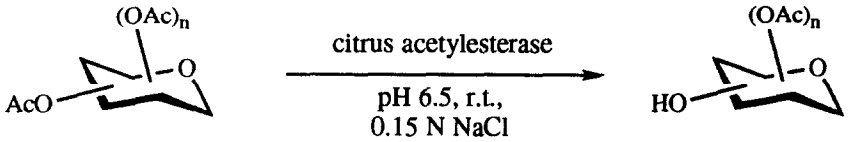
Kenji MIYAMOTO, Hiromichi OHTA,
Department of Chemistry, Keio University, 3-14-1, Hiyoshi, Kohokuku, Yokohama 223, Japan
Yoshihiro OSAMURA,
Department of Chemistry, Rikkyo University, 3-34-1, Nishiikebukuro, Toshimaku Tokyo 171, Japan

Syn-periplanar conformation of **1** is proposed to be essential to smooth enzymatic decarboxylation of **1** to afford chiral monocarboxylic acid **2**.

BioMed. Chem. **1994**, *2*, 477

ACETYLESTERASE FROM ORANGE PEEL AS BIOCATALYST FOR THE CHEMO- AND REGIOSELECTIVE DEPROTECTION OF CARBOHYDRATES

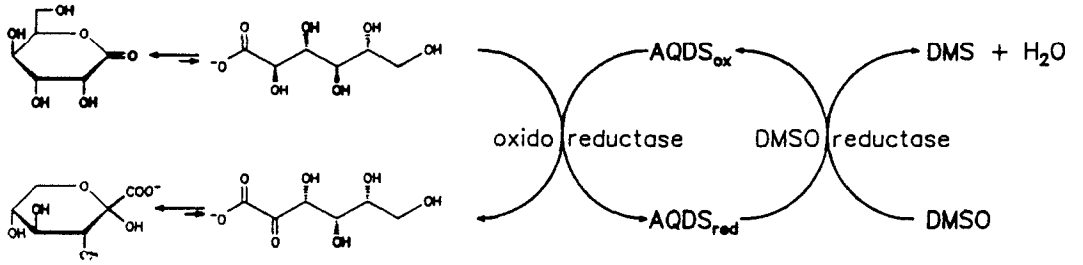
Herbert Waldmann* and Axel Heuser
Universität Karlsruhe, Institut f. Organ. Chemie, Richard-Willstätter-Allee 2, D-76128 Karlsruhe



BioMed. Chem. **1994**, *2*, 483

P. Mirabilis Dehydrogenates Aldonates and Aldarates with an (*R*)-Configured α-Carbon Atom to the Corresponding 2-Oxocarboxylates

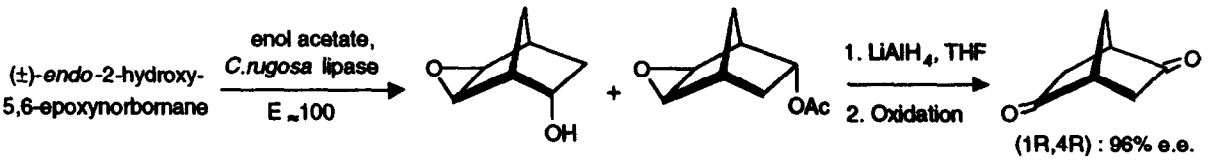
C. Schinschel and H. Simon, *Institute of Organic Chemistry, Technische Universität München, D-85747 Garching*



BioMed. Chem. **1994**, *2*, 493

CHEMOENZYMATIC ACCESS TO ENANTIOMERIC BICYCLO[2.2.1]HEPTAN-2,5-DIONES

Alexandra Weissfloch and Robert Azerad*, Laboratoire de Chimie et Biochimie Pharmacologiques et Toxicologiques, URA 400 CNRS, Université René Descartes, 45 rue des Saints-Pères, 75270-Paris Cedex 06, France.

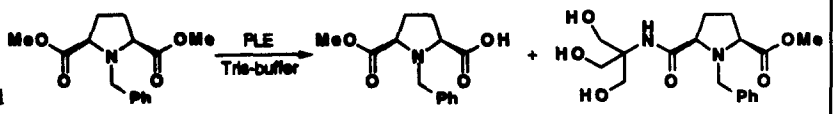


BioMed. Chem. **1994**, *2*, 501

Enhanced Stereoselectivity in Pig Liver Esterase Catalysed Diester Hydrolysis. The Role of a Competitive Nucleophile

Anders Mattson,[a] John Boutelje,[b] Ingeborg Csöregh,[c] Mats Hjalmarsson,[a] Ulla Jacobsson,[a] Mariane Lindbäck,[a] Torbjörn Norin,[a] Peter Szmulik[a] and Karl Hult[b]*

[a]*Department of Chemistry, Organic Chemistry, Royal Institute of Technology, S-100 44 Stockholm, Sweden* [b]*Department of Biochemistry and Biotechnology, Royal Institute of Technology, S-100 44 Stockholm, Sweden* [c]*Department of Structural Chemistry, Arrhenius Laboratory, University of Stockholm, S-106 91 Stockholm, Sweden*



The increased enantioselectivity of pig liver esterase catalysed hydrolysis of *cis*-N-benzyl-2,5-bis(methoxycarbonyl)-pyrrolidine,performed in media buffered with tris-(hydroxymethyl) aminomethane (Tris), was explained by the preference of Tris to react faster with one of the diastereomeric acyl enzymes over the other. An acid-amide product was isolated, and NMR-studies revealed the presence of an ester-amide intermediate.

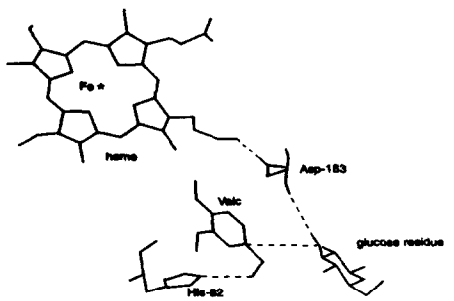
BioMed. Chem. **1994**, *2*, 509

DO CARBOHYDRATES PLAY A ROLE IN THE LIGNIN PEROXIDASE CYCLE?

redox catalysis in the endergonic region of the driving force

Hans E. Schoemaker[1,*], Taina K. Lundell[2], René Floris[3], Tuomo Glumoff[4], Kaspar H. Winterhalter[5] and Klaus Piontek[5]

[1]*DSM Research, Bio-organic chemistry section, P.O. Box 18, 6160 MD Geleen, The Netherlands;* [2]*University of Helsinki, Finland;* [3]*University of Amsterdam, The Netherlands;* [4]*University of Turku, Finland;* [5]*ETH, Zürich, Switzerland;*

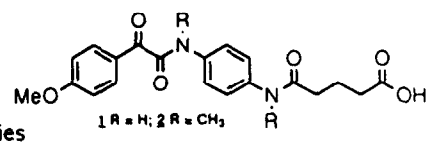


Abstract: The redox cycle of lignin peroxidase is described in terms of Marcus theory of electron transfer. The oxidation of veratryl alcohol occurs in the endergonic region of the driving force, still the reduction of LiP Compound I is irreversible. A reversible reaction of the incipient veratryl alcohol radical cation with a glucose residue located at the entrance of the active site channel is postulated.

BioMed. Chem. **1994**, *2*, 521

TWISTED α-KETO AMIDES AS TRANSITION-STATE ANALOGUES FOR ACYL-TRANSFER REACTIONS: SYNTHESIS OF THE IMMUNOCONJUGATES

Jari Yli-Kauhaluoma# and Kim Janda*
#On leave from Technical Research Centre of Finland, Chemical Laboratory, Biologinkuja 7, FIN-02150 Espoo, Finland
*The Scripps Research Institute, Departments of Molecular Biology and Chemistry, 10666 North Torrey Pines Road, La Jolla, CA 92037



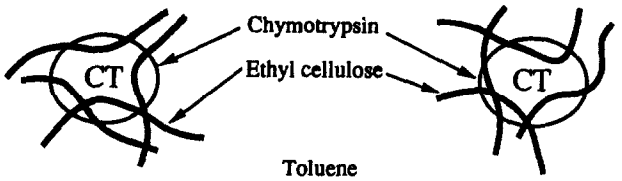
Two α-keto amides 1 and 2 were employed as antigens to elicit antibodies for acyl-transfer reactions. The rationale for their design, synthesis, and immunization protocols will be discussed.

SYNTHETIC POLYMERS AS SOLUBILIZING VEHICLES FOR ENZYMES IN WATER-POOR MEDIA.

BioMed. Chem. **1994**, *2*, 529

Patrick Adlercreutz, Bo Mattiasson, Marina Otamiri
Department of Biotechnology, Chemical Center, Lund University, Lund, Sweden

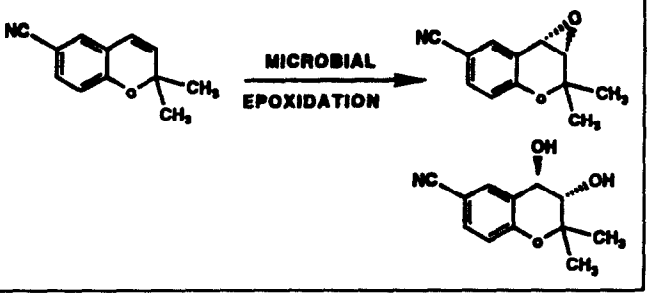
Non-covalent enzyme-polymer complexes were formed by freeze-drying aqueous solutions of enzymes and polymers. Complex formation made it possible to solubilize the enzymes in organic solvents and thereby act as catalysts for the conversion of hydrophobic compounds.



Stereoselective Epoxidation of 2,2-Dimethyl-2H-1-benzopyran-6-carbonitrile

BioMed. Chem. **1994**, *2*, 535

Ramesh Patel*, Amit Banerjee, Brian Davis, Jeffrey Howell, Clyde McNamee, David Brzozowaski, Jeffrey North, David Kronenthal and Laszlo Szarka
Department of Microbial Technology, Bristol-Myers Squibb Pharmaceutical Research Institute, P.O. Box 191, New Brunswick, NJ 08903

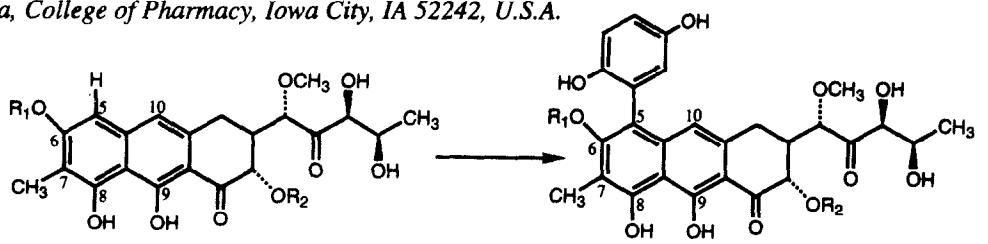


Mortierella ramanniana SC 13840 and Corynebacterium sp.SC 13876 were used to prepare (3S,4S-cis)-3,4-Dihydro-2,2-dimethyl-2H oxireno [c] [1] benzopyran-6-carbonitrile and (3S,4R)-3,4-dihydro-3,4-dihydroxy-2,2-dimethyl-2H-1-benzopyran-6-carbonitrile

Oxidative Coupling of Mithramycin and Hydroquinone Catalyzed by Copper Oxidases and Benzoquinone. Implications for the Mechanism of Action of Aureolic Acid Antibiotics.

BioMed. Chem. **1994**, *2*, 543

I. O. Anyanwutaku, R. J. Petroski and J. P. N. Rosazza
Division of Medicinal and Natural Products Chemistry, and Center for Biocatalysis and Bioprocessing, University of Iowa, College of Pharmacy, Iowa City, IA 52242, U.S.A.

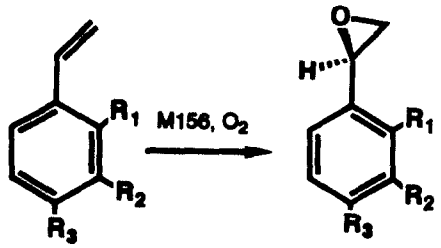


Epoxidation of Stryrene and Substituted Styrenes by Whole Cells of Mycobacterium sp M156

BioMed. Chem. **1994**, *2*, 553

Stuart R. Rigby,[1] Collette S. Matthews[2] and David J. Leak[2]
[1]*ZENECA Bio Products, P.O. Box 2, Belasis Avenue, Billingham, Cleveland, TS23 1YN, U.K.*
[2]*Centre for Biotechnology, Department of Biochemistry, Imperial College of Science Technology and Medicine, London SW7 2AZ, U.K.*

Propene grown *Mycobacterium* sp M156 catalyses the stereospecific conversion of styrene and ring mono-substituted styrenes to their epoxides in high enantiomeric excess, at rates comparable to that of the natural substrate, propene. Substituents closer to the site of epoxidation reduce the rate of reaction.



R_1 =F; R_2 = F,Cl, CH_3; R_3 = F, Cl, CH_3