Reviews

Synthetic Glycopeptides for the Development of Antitumour Vaccines

Sebastian Dziadek, Carmen G. Espínola, Horst Kunz


In the search for antitumour vaccines, glycopeptides containing tumour-associated saccharide antigens and peptide sequences may hold a key. This review covers a number of synthetic strategies to couple these disparate functionalities as well as how this can be achieved by means of solid-phase syntheses.

Designing Biostable Polyurethane Elastomers for Biomedical Implants

Pathiraja A. Gunatillake, Darren J. Martin, Gordon F. Meijs, Simon J. McCarthy, Raju Adhikari


Synthetic elastomers as implantable medical components need have characteristics that impart good biological compatibility with the surrounding environment, including resistance to premature failure or degradation. Polyurethanes have enjoyed some success, particularly in cardiovascular applications, such as the heart valve shown in the graphic. Presented here are chemistry, synthesis, morphology, and mechanisms of polyurethane degradation, and recent advances in design and synthesis of new polyurethanes with improved biostability.
Current Chemistry

Trends in Chrysanthemic Acid Chemistry: A Survey of Recent Pyrethrum Syntheses
Stéphane Jeanmart

Pyrethroic acids are essential constituent of the pyrethroids, which are some of the most powerful commercially available insecticides. This paper presents an overview of the recent trends in the field of chrysanthemic acid synthesis, showing the scope of organic chemistry involved.

Full Papers

Synthesis of Photopolymerizable Glycolipids and their Application as Scaffolds To Immobilize Proteins with a Micron-Sized Pattern
Noriko Nagahori, Kenichi Niikura, Reiko Sadamoto, Kenji Monde, Shin-Ichiro Nishimura

Carbohydrate-binding proteins immobilized on photopolymerized glycolipid thin films showed submicron-sized patterns such as dendrites, dots, and networks as observed by AFM; one such image is shown. Multunit-type lectins immobilized on the film exhibited the ability to interact specifically with carbohydrate ligands by using unoccupied binding sites.

Martin G. Banwell, Mark J. Coster, Alison J. Edwards, Markus Vögtle

The phomoidrides, one of which is shown, act as rather potent inhibitors of Ras farnesyl transferase and are of interest as potential anti-tumour agents and regulators of cholesterol biosynthesis. Reported herein is a new synthetic strategy whose features could also enable construction of various polycyclic frameworks incorporating the vicinally and trans-related ‘phomoidride-type’ side-chains.

A Total Synthesis of the Styryllactone (+)-Goniodiol from Naphthalene
Martin G. Banwell, Mark J. Coster, Alison J. Edwards, Ochitha P. Karunaratne, Jason A. Smith, Lee L. Welling, Anthony C. Willis

(+)-Goniodiol, a styryllactone that exhibits significant cytotoxicity against the A-549 human lung tumour cell line, has been synthesized from an enantiomerically pure compound which is available in multi-gram quantities by microbial dihydroxylation of naphthalene. This represents the first application of this abundant metabolite to the synthesis of a natural product, and serves to highlight the extraordinary utility of such enzymatically derived dihydrocatechols.

Arylpropanolamines Incorporating an Antioxidant Function as Neuroprotective Agents

Structure–activity relationship studies for a series of arylpropanolamines (shown) indicate that their sodium channel blocking activity is largely independent of the aryl ring substituents, and is mainly associated with the aminopyrimidine moiety. Furthermore, the unsymmetrical pyrimidines were found to be more active antioxidants, while the least active were those that contained a strong electron-withdrawing substituent in the para-position.
2,6-Diazaanthracene-9,10-dione and its Radical Anion—A Structural and Spectroscopic Investigation

Joy L. Morgan, Amar Flood, Keith C. Gordon, Henrik G. Kjaergaard, Brian H. Robinson, Jim Simpson


Sphaeropsidin F, a New Pimarane Diterpene Produced in Vitro by the Cypress Pathogen Sphaeropsis sapinea f. sp. cupressi

Antonio Evidente, Lorenzo Sparapano, Anna Andolfi, Giovanni Bruno, Andrea Motta


Short Communications

Sesquiterpene Lactones and other Constituents from the Aerial Parts of Carpesium macrocephalum

Chao Yang, Ying Zhu, Zhong-Jian Jia


Synthesis and Phytotoxicity Evaluation of Substituted para-Benzooquinones

Larissa S. Lima, Luiz Cláudio de A. Barbosa, Elson S. de Alvarenga, Antônio J. Demuner, Antônio A. da Silva


Focus

gem-Dihalocyclopropanes as Building Blocks in Natural Product Synthesis

Rebecca M. Taylor

Corrigendum


This manuscript was incorrectly flagged as a ‘Short Communication’ rather than as a ‘Full Paper’ in print. The editorial staff apologize for this oversight. The correct version appears at www.publish.csiro.au/journals/article.cfm?F=CH02169.pdf.

Author Index

Adhikari, R. 545
Andolfi, A. 615
Angyal, S. J. 633
Banwell, M. G. 577, 585
Bruno, G. 615
Callaway, J. K. 597
Campi, E. M. 597
Coster, M. J. 577, 585
da Silva, A. A. 625
de A. Barbosa, L. C. 625
de Alvarenga, E. S. 625
Demuner, A. J. 625
Dziadek, S. 519
Edwards, A. J. 577, 585
Espinola, C. G. 519
Evidente, A. 615
Flood, A. 607
Gerrard, J. A. 633
Godfrey, P. D. 597
Gordon, K. C. 607
Gunatillake, P. A. 545
Jackson, W. R. 597
Jarrott, B. 597
Jeanmart, S. 559
Jia, Z.-J. 621
Joubra, L. 597
Karunaratne, O. P. 585
Kjaergaard, H. G. 607
Kunz, H. 519
Lima, L. S. 625
Martin, D. J. 545
McCarty, S. J. 545
Meijs, G. F. 545
Monde, K. 567
Morgan, J. L. 607
Motta, A. 615
Nagahori, N. 567
Niikura, K. 567
Nishimura, S.-I. 567
Robinson, A. J. 597
Robinson, B. H. 607
Sadamoto, R. 567
Simpson, J. 607
Smith, J. A. 585
Sparapano, L. 615
Taylor, R. M. 631
Vögtle, M. 577
Welling, L. L. 585
Wells, B. A. 597
Willis, A. C. 585
Yang, C. 621
Zhu, Y. 621