

Phytochemistry Vol. 67, No. 23, 2006

Contents

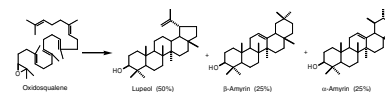
MOLECULAR GENETICS AND GENOMICS

Molecular cloning and functional expression of a multifunctional triterpene synthase cDNA from a mangrove species *Kandelia candel* (L.) Druce

pp 2517–2524

Mohammad Basyuni, Hirosuke Oku*, Masashi Inafuku, Shigeyuki Baba, Hironori Iwasaki, Keichiro Oshiro, Takafumi Okabe, Masaaki Shibuya and Yutaka Ebizuka

An oxidosqualene cyclase homologue was cloned from *Kandelia candel* (L.) Druce, and identified as a multifunctional triterpene synthase able to produce lupeol, β -amyrin and α -amyrin in a 2:1:1 ratio by expression in the mutant yeast strain GIL77.

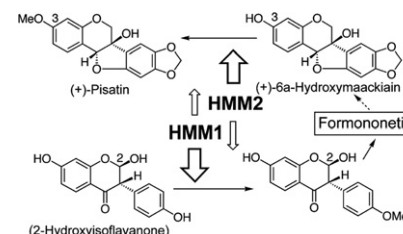


Catalytic specificity of pea *O*-methyltransferases suggests gene duplication for (+)-pisatin biosynthesis

pp 2525–2530

Tomoyoshi Akashi, Hans D. VanEtten*, Yuji Sawada, Catherine C. Wasmann, Hiroshi Uchiyama and Shin-ichi Ayabe

Two highly homologous isozymes of (+)-6a-hydroxymaackiain 3-*O*-methyltransferase (HMM) have been identified in pea. Catalytic activity studies suggest HMM1 functions early in isoflavonoid biosynthetic pathway to produce the common intermediate formononetin while HMM2 functions specifically in the biosynthesis of the phytoalexin (+)-pisatin. We propose that *HMM2* evolved by gene duplication.

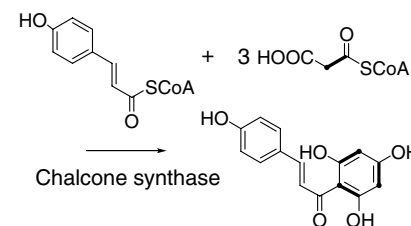


Cloning and characterization of chalcone synthase from the moss, *Physcomitrella patens*

pp 2531–2540

Chenguang Jiang, Clark K. Schommer, Sun Young Kim and Dae-Yeon Suh*

A gene encoding a chalcone synthase from the moss, *Physcomitrella patens* was cloned and the recombinant protein characterized. Its enzymatic properties were similar to those of higher plant CHSs. Phylogenetic analysis placed the moss CHS at the base of the plant CHS clade. Genomic sequence analysis revealed the presence of a CHS multigene family in the moss.



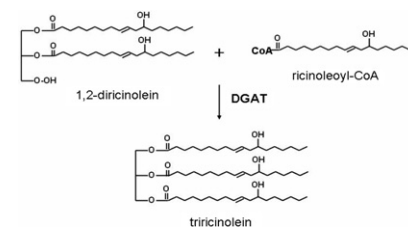
METABOLISM

Identification and functional expression of a type 2 acyl-CoA:diacylglycerol acyltransferase (DGAT2) in developing castor bean seeds which has high homology to the major triglyceride biosynthetic enzyme of fungi and animals

pp 2541–2549

Johan T.M. Kroon, Wenxue Wei, William J. Simon and Antoni R. Slabas*

Diacylglycerol acyltransferase (DGAT) catalyses the terminal reaction in acyl-CoA dependent triacylglycerol (TAG) biosynthesis. We have cloned a form of DGAT from castor bean, DGAT2. Expressional studies are consistent with it having a major role in TAG biosynthesis.

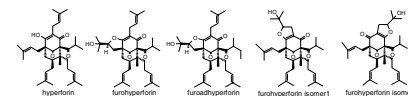


Hyperforin and its analogues inhibit CYP3A4 enzyme activity

pp 2550–2560

Ju-young Lee, Rujee K. Duke, Van H. Tran, James M. Hook and Colin C. Duke*

Hyperforin and its four oxidized analogues were isolated from St. John's wort and evaluated for their effects on CYP3A4 enzyme activity.



Carboxylesterase activities toward pesticide esters in crops and weeds

pp 2561–2567

Markus Gershater, Kate Sharples and Robert Edwards*

Carboxylesterase activities toward xenobiotic and pesticide ester substrates have been determined in 13 species of crops and weeds including *Arabidopsis thaliana*. The esters were hydrolysed in a species-specific manner with methyl-2,4-dichlorophenoxyacetic acid being the optimal pesticide substrate for hydrolysis and hence bioactivation. *Arabidopsis* was found to serve as a particularly useful model system.



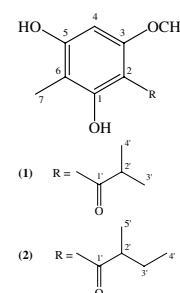
BIOACTIVE PRODUCTS

Anti-staphylococcal acylphloroglucinols from *Hypericum bearii*

pp 2568–2572

Winnie Ka Po Shiu and Simon Gibbons*

Bioassay-guided fractionation of the dichloromethane extract of *Hypericum bearii* (Guttiferae) led to the isolation of a mixture of two acylphloroglucinols (**1** and **2**), 1,7-dihydroxyxanthone, stigmasterol, catechin and shikimic acid. The minimum inhibitory concentration (MIC) values of the acylphloroglucinol mixture and xanthone against multidrug-resistant *Staphylococcus aureus* strains ranged from 16–32 µg/ml to 128–256 µg/ml, respectively.

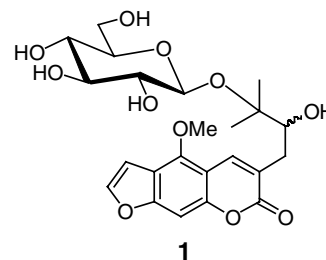


Inhibition of MMP-2 secretion from brain tumor cells suggests chemopreventive properties of a furanocoumarin glycoside and of chalcones isolated from the twigs of *Dorstenia turbinata*

pp 2573–2579

Bathelemy Ngameni, Mohamed Touaibia, Ramesh Patnam, Anissa Belkaid, Pascal Sonna, Bonaventure T. Ngadjui, Borhane Annabi* and René Roy*

Antitumorigenic properties of compounds isolated from the twigs of *Dorstenia turbinata* were evaluated through the inhibition of matrix metalloproteinase (MMP)-2 secretion from human U87 glioblastoma cells. Among the compounds isolated, a furanocoumarin glycoside, named turbinatocoumarin (**1**), together with eight known compounds, were shown to possess inhibitory properties as potent as those of the chemopreventive and naturally occurring MMP secretion inhibitors chlorogenic acid and epigallocatechin-3-gallate.



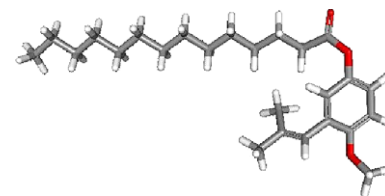
CHEMISTRY

Raman spectroscopic monitoring of *Lactarius latex*

pp 2580–2589

Kris De Gussem*, Annemieke Verbeken, Peter Vandenaabeele, Joke De Gelder and Luc Moens

Lactarius species exude a milky fluid when bruised. Starting from a single species dependant fatty acid precursor several reactions occur and many chemicals are produced. Raman spectroscopy was used and tested as a novel tool of analysis for the chemical composition and reactions of *L. latex*.



Identification and comparison of natural rubber from two *Lactuca* species

pp 2590–2596

Bradley S. Bushman, Andrew A. Scholte, Katrina Cornish, Deborah J. Scott, Jenny L. Brichta, John C. Vederas, Oswaldo Ochoa, Richard W. Micheltore, David K. Shintani and Steven J. Knapp*

High molecular weight *cis*-1,4-polyisoprene rubber was isolated from the latex of *Lactuca sativa* and *Lactuca serriola*. The latex contained rubber transferase activity and produced rubber with a narrow molecular weight range.

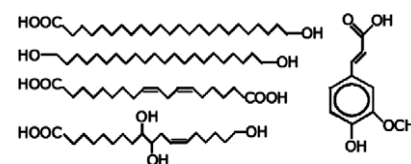


The lipid polyester composition of *Arabidopsis thaliana* and *Brassica napus* seeds

pp 2597–2610

Isabel Molina, Gustavo Bonaventure, John Ohlrogge and Mike Pollard*

Analysis of the presumed cutin and suberin monomers of the mature seeds of *Brassica napus* and *Arabidopsis thaliana* shows a similar grouping of monomer classes but some significant differences in molecular species compositions.



OTHER CONTENTS

Announcement	p I
Announcement: The Phytochemical Society of Europe	p II
Author Index	p III
* Corresponding author	

The Editors encourage the submission of articles online, thus reducing publication times. For further information and to submit your manuscript, please visit the journal homepage at <http://www.elsevier.com/locate/phytochem>



ELSEVIER

ISSN 0031-9422

INDEXED/ABSTRACTED IN: *Current Awareness in Biological Sciences (CABS)*, *Curr Cont ASCA*, *Chem. Abstr.*, *BIOSIS Data*, *PASCAL-CNRS Data*, *CAB Inter*, *Cam Sci Abstr*, *Curr Cont/Agri Bio Env Sci*, *Curr Cont/Life Sci*, *Curr Cont Sci Cit Ind*, *Curr Cont SCISEARCH Data*, *Bio Agri Ind*. Also covered in the abstract and citation database *SCOPUS*[®]. Full text available on *ScienceDirect*[®].

Available online at

www.sciencedirect.com