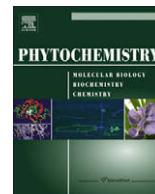




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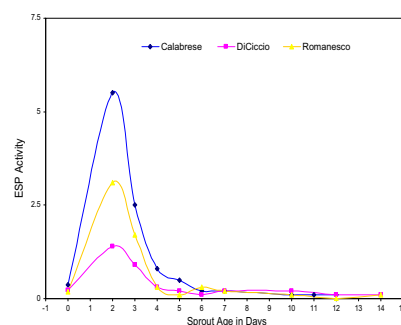
PROTEIN BIOCHEMISTRY AND PROTEOMICS

Epithiospecifier protein activity in broccoli: The link between terminal alkenyl glucosinolates and sulforaphane nitrile

pp 2765–2773

David J. Williams*, Christa Critchley, Sharon Pun, Stephen Nottingham, Timothy J. O'Hare

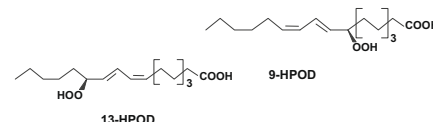
We measured ESP activity over 15 days of broccoli seedling development and correlated these with myrosinase activity and the levels of terminal alkenyl glucosinolates and sulforaphane nitrile. We show ESP activity increases to day 2 before decreasing to imbibed seed activity at day 5. Terminal alkenyl glucosinolate and sulforaphane nitrile content and ESP activity correlated closely.

**Identification of an amino acid determinant of pH regiospecificity in a seed lipoxygenase from *Momordica charantia***

pp 2774–2780

Ellen Hornung, Susan Kunze, Alena Liavonchanka, Grit Zimmermann, Diana Kühn, Kathrin Fritsche, Andreas Renz, Hartmut Kühn, Ivo Feussner*

Analyses of the active site of this lipoxygenase revealed a determinant for pH-dependent regiospecificity.



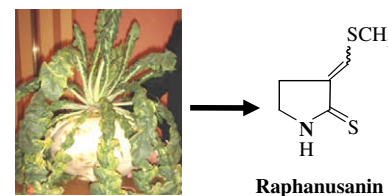
MOLECULAR GENETICS AND GENOMICS

Raphanusanin-induced genes and the characterization of *RsCSN3*, a raphanusanin-induced gene in etiolated radish hypocotyls

pp 2781–2792

Moehninsi, Kosumi Yamada, Tsuyoshi Hasegawa, Hideyuki Shigemori*

This is the first report of genes in radish seedlings induced by the light-induced growth-inhibitory substance raphanusanin. Four known genes encoding functional proteins were found to be differentially expressed in the raphanusanin treated samples versus the lanolin base control. In fact, three of the four genes are genes that respond to diverse environmental stimuli. As a first target of the functional analysis of the candidate genes, we investigated the particularly interesting gene *RsCSN3*, a homologue of subunit 3 of the COP9 signalosome (*CSN3*). Expression analysis was used to evaluate the responsiveness of this gene to various stimuli.



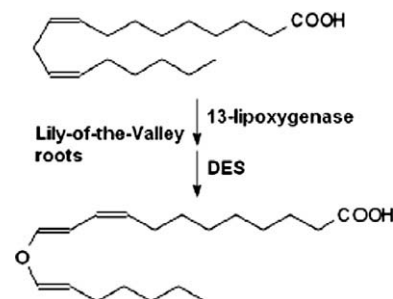
METABOLISM

Detection of divinyl ether synthase in Lily-of-the-Valley (*Convallaria majalis*) roots

pp 2793–2798

Anna V. Ogorodnikova, Larisa R. Latypova, Fahima K. Mukhitova, Lucia S. Mukhtarova, Alexander N. Grechkin*

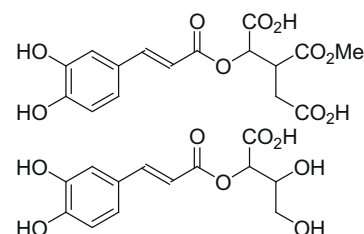
Cell-free preparation from Lily-of-the-Valley (*Convallaria majalis* L., Ruscaceae) roots revealed the presence of 13-lipoxygenase and divinyl ether synthase (DES) activities. Exogenous linoleic acid was metabolized predominantly into (9Z,11E,1'E)-12-(1'-hexenyloxy)-9,11-dodecadienoic (etheroleic) acid. Its identification was confirmed by the data of ultraviolet spectroscopy, mass spectra, ¹H NMR, COSY, catalytic hydrogenation.



Extraction, structural characterisation and evaluation of hydroxycinnamate esters of orchard grass (*Dactylis glomerata*) as substrates for polyphenol oxidase

pp 2799–2806

Ifat Parveen*, Ana Winters, Michael D. Threadgill, Barbara Hauck, Phillip Morris

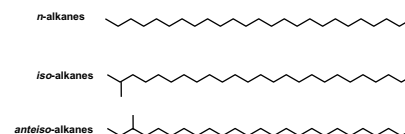


Biosynthetic and environmental effects on the stable carbon isotopic compositions of *anteiso*- (3-methyl) and *iso*- (2-methyl) alkanes in tobacco leaves

pp 2807–2814

Kliti Grice*, Hong Lu, Youping Zhou, Hilary Stuart-Williams, Graham D. Farquhar

Nicotiana tabacum is the only plant known to biosynthesise large quantities of *anteiso*-alkanes and *iso*-alkanes (in the C₂₉–C₃₃ carbon number range). We investigated the carbon isotope ratios of the latter compounds extracted from tobacco. The *anteiso*-alkanes are enriched in ¹³C by 2‰ compared to the *n*-alkanes and *iso*-alkanes, supporting a different biosynthetic precursor (2-methylbutanoyl C5-CoA).



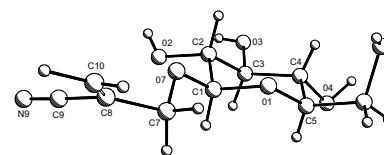
BIOACTIVE PRODUCTS

In vitro anti-influenza screening of several Euphorbiaceae species: Structure of a bioactive Cyanoglucoside from *Codiaeum variegatum*

pp 2815–2819

Jorge Eduardo Forero, Liliana Avila, Natalia Taborda, Paula Tabares, Albeiro López, Fernando Torres, Winston Quiñones, María A. Bucio, Yolanda Mora-Pérez, Maria Teresa Rugeles, Pedro Joseph-Nathan, Fernando Echeverri*

A bio-guided screening against influenza A virus (FLUAV) was carried out with seven Euphorbiaceae species. The results showed that *Phyllanthus niruri*, *Euphorbia pulcherrima* and *Codiaeum variegatum* fractions have relevant anti-FLUAV activity, although only chromatographical subfractions from *C. variegatum* retained the activity. From this plant an active cyanoglucoside against FLUAV was isolated which displayed virucidal activity without impairment of the haemagglutination properties of the virus strain used. This is the first report indicating antiviral activity of a cyanoglucoside.

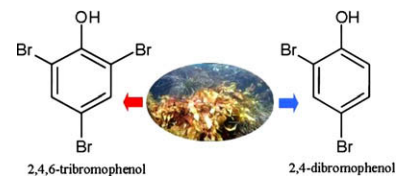


Potent α -glucosidase inhibitors purified from the red alga *Grateloupia elliptica*

pp 2820–2825

K.Y. Kim, K.A. Nam, H. Kurihara, S.M. Kim*

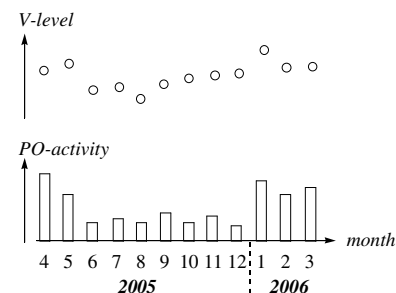
The bromophenols, 2,4,6-tribromophenol and 2,4-dibromophenol, purified from *Grateloupia elliptica* effectively inhibited *Saccharomyces cerevisiae* and *Bacillus stearothermophilus* α -glucosidases, and moderately inhibited rat-intestinal sucrase and maltase as well. Both bromophenols exhibited mixed inhibition against *S. cerevisiae* α -glucosidase.

**CHEMISTRY****Bromoperoxidase activity and vanadium level of the brown alga *Ascophyllum nodosum***

pp 2826–2830

Jens Hartung*, Oliver Brücher, Diana Hach, Heiko Schulz, Hans Vilter, Gunter Ruick

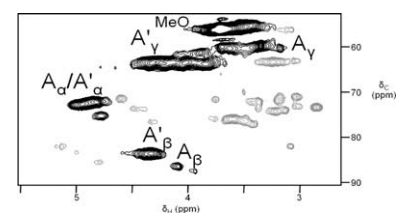
Highest vanadium-dependent peroxidase activity and most significant vanadium levels were found in specimen of *Ascophyllum nodosum* collected in between midwinter and early spring (Roscoff/France).

**Monolignol acylation and lignin structure in some nonwoody plants: A 2D NMR study**

pp 2831–2843

Ángel T. Martínez*, Jorge Rencoret, Gisela Marques, Ana Gutiérrez, David Ibarra, Jesús Jiménez-Barbero, José C. del Río

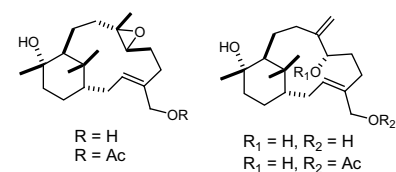
2D NMR suggests that some angiosperms use monolignol acylation (at the γ -position) as a mechanism to control the molecular structure of lignin. Spectra revealed correlations between the ratio of acylated (A')-to-non-acylated (A) units and both (i) the abundance of syringyl units, and (ii) the absence of β - β' linkages in lignin.

**Oxygenated verticillene derivatives from *Bursera suntui***

pp 2844–2848

Hugo A. García-Gutiérrez, Carlos M. Cerda-García-Rojas*, Juan D. Hernández-Hernández*, Luisa U. Román-Marín, Pedro Joseph-Nathan

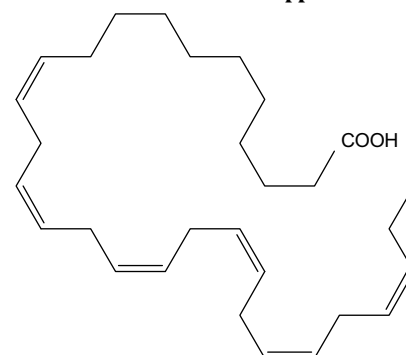
Four verticillane derivatives were isolated from *Bursera suntui*. Their structures, stereochemistry and conformational preferences were evaluated by DFT molecular modeling in combination with NMR measurements including NOESY correlations.



Odd-numbered very-long-chain polyunsaturated fatty acids from the dinoflagellate *Amphidinium carterae* identified by atmospheric pressure chemical ionization liquid chromatography–mass spectrometry

Tomáš Řezanka*, Linda Nedbalová, Karel Sigler

Enrichment of odd very-long-chain polyunsaturated fatty acids (VLCPUFAs) from total fatty acids of *Amphidinium carterae* by RP-HPLC and argentation TLC and their identification as picolinyl esters by microbore LC–MS was used to identify rare and unusual odd VLCPUFAs up to nonacosahexaenoic acid.

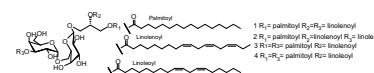


pp 2849–2855

Glycerogalactolipids from the fruit of *Lycium barbarum*

Zengping Gao, Zulfiqar Ali, Ikhlas A. Khan*

Glycerogalactolipids (**1–4**) were isolated from the fruit of *Lycium barbarum*.

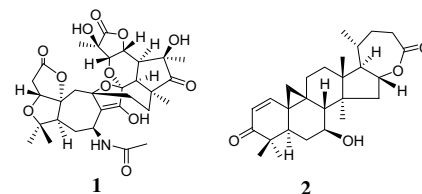


pp 2856–2861

Nortriterpenoids and lignans from *Schisandra sphenanthera*

Wei-Lie Xiao, Sheng-Xiong Huang, Rui-Rui Wang, Jia-Liang Zhong, Xue-Mei Gao, Fei He, Jian-Xin Pu, Yang Lu, Yong-Tang Zheng, Qi-Tai Zheng, Han-Dong Sun*

Nortriterpenoids, sphenadilactone C (**1**) and sphenasin A (**2**), together with four known lignans (**3–6**), were isolated from the leaves and stems of *Schisandra sphenanthera*. Compound **1** characterized with a partial enol moiety and an acetamide group in its structure. Compound **2** featured a biosynthetically modified seven-membered lactone ring.

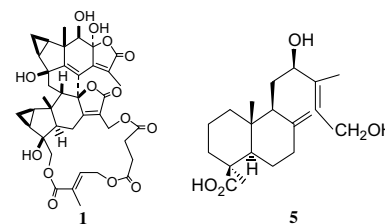


pp 2862–2866

Bis-sesquiterpenes and diterpenes from *Chloranthus henryi*

Chuang-Jun Li, Dong-Ming Zhang*, Yong-Ming Luo*, Shi-Shan Yu, Yan Li, Yang Lu

Four bis-sesquiterpenes and three diterpenes were isolated from roots of *Chloranthus henryi*. Compounds **1**, **5**, **6** and **7** showed moderate hepatoprotective activities against D-galactosamine-induced toxicity in WB-F344 rat hepatic epithelial stem-like cells with IC₅₀ values of 0.19, 0.66, 0.09 and 0.18 μM, respectively. Moreover, compounds **3** and **5** showed cytotoxic activities against BEL-7402, HCT-8, and BGC-823 cells.



pp 2867–2874

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* Corresponding author

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