

Phytochemistry Vol. 66, No. 16, 2005

Contents

FULL PAPERS

PROTEIN BIOCHEMISTRY

Removal of the *N*-linked glycan structure from the peanut peroxidase *prxPNC2*: Influence on protein stability and activity

Ranjith Pathirana, Lyn Watson, Balance Chen, Susanna Leung, Christine Voisey, Trish Murray, Michael T. McManus*

Transgenic tobacco has been generated that is transformed with either the wild-type peanut peroxidase *prxPNC2* cDNA (PNC2-WT), or a mutated *prxPNC2* cDNA in which the asparagine residue (Asn₁₈₉) at the single point of glycan attachment has been replaced with alanine (PNC2-M). Kinetic analysis has shown that the loss of the single strategic *N*-linked glycan has primarily influenced the thermostability of the PNC2 isoenzyme, as well as the thermal activation energy.

pp 1869–1879

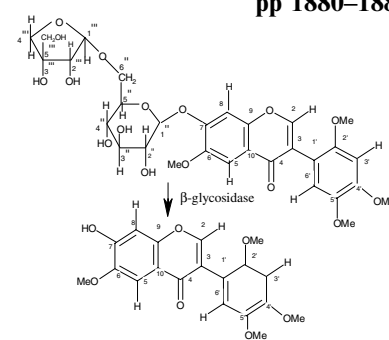
Summary of properties of the PNC2-WT and PNC2-M peroxidase isozymes

	PNC2-WT	PNC2-M
Kinetic parameters:		
Apparent Km Guaiacol (mM)	11.2	11.9
H ₂ O ₂ (mM)	1.29	1.12
Activation energy (KJ mol ⁻¹)	17.6	22.9

Purification of an isoflavonoid 7-O- β -apiosyl-glucoside β -glycosidase and its substrates from *Dalbergia nigrescens* Kurz

Phimonphan Chuankhayan, Yanling Hua, Jisnuson Svasti, Santi Sakdarat, Patrick A. Sullivan, James R. Ketudat Cairns*

A β -glycosidase which hydrolyzes isoflavonoid glycosides, removing β -apiosyl glucose, and two substrates were purified from *Dalbergia nigrescens* seeds, and the glycoside substrate structures were identified.



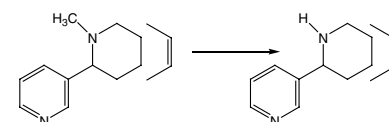
pp 1880–1889

METABOLISM

Stereoselectivity of the demethylation of nicotine piperidine homologues by *Nicotiana plumbaginifolia* cell suspension cultures

Trixie Ann Bartholomeusz, Roland Molinié, Albrecht Roscher, François-Xavier Felpin, Françoise Gillet, Jacques Lebreton, François Mesnard*, Richard J. Robins*

Cell cultures of *Nicotiana plumbaginifolia* rapidly demethylate (*R*)-*N*-methylanabasine and (*R*)-*N*-methylanatabine, (*R*)-anabasine and (*R*)-anatabine, respectively, accumulating in the medium. (*S*)-Anabasine and (*S*)-anatabine accumulate much more slowly.



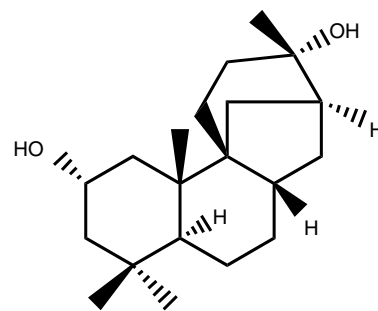
pp 1890–1897

Stemodane and stemarane diterpenoid hydroxylation by *Mucor plumbeus* and *Whetzelinia sclerotiorum*

pp 1898–1902

Avril R.M. Chen, Peter L.D. Ruddock, Andrew S. Lamm,
William F. Reynolds, Paul B. Reese*

Stemodin, stemodinone and stemarin were transformed by *M. plumbeus* to afford 4, 2 and 2 metabolites, respectively. Stemodin and stemodinone were converted into 2 and 1 products, respectively, by *W. sclerotiorum*.



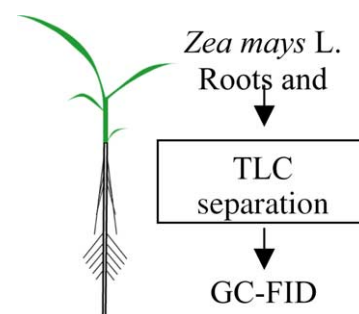
ECOLOGICAL BIOCHEMISTRY

Aluminum mediates compositional alterations of polar lipid classes in maize seedlings

pp 1903–1912

Radhouane Chaffai*, Brahim Marzouk, Ezzedine El Ferjani

The effect of aluminum on fatty acids from various polar lipid classes is investigated in roots and shoots of maize seedlings.



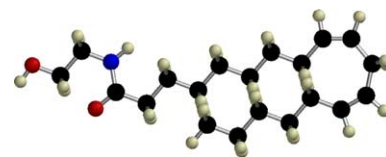
CHEMOTAXONOMY

N-acylethanolamines in seeds of selected legumes

pp 1913–1918

Barney J. Venables*, Cheryl A. Waggoner, Kent D. Chapman

N-acylethanolamines found in plants are thought to serve as cytoprotective and/or signaling compounds. They are of interest as potential therapeutic agents because of their activity in mammalian endocannabinoid signaling. Generally enriched in seeds over vegetative tissues, they occur at very high concentrations among some of the legume seeds studied.



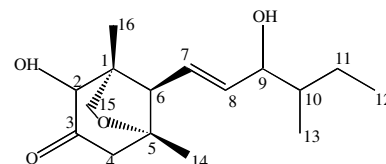
BIOACTIVE PRODUCTS

A bioactive annuionone from sunflower leaves

pp 1919–1921

Tehmina Anjum*, Rukhsana Bajwa

A annuionone was isolated from dry leaves of *Helianthus annuus* L. cv. Suncross-42 using high performance liquid chromatography and the chemical structure was elucidated on the bases of NMR and mass spectral data.

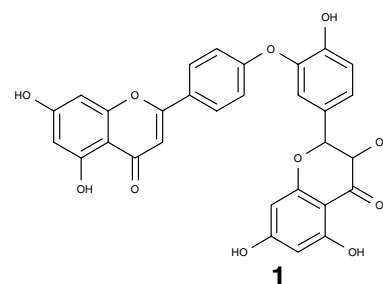


Antimicrobial biflavonoids from the aerial parts of *Ouratea sulcata*

pp 1922–1926

Dieudonné Emmanuel Pegnyemb*, Josephine Ngo Mbing,
Alex de Théodore Atchadé, Raphael Ghogomu Tih,
Beiban Lucas Sondengam, Alain Blond, Bernard Bodo

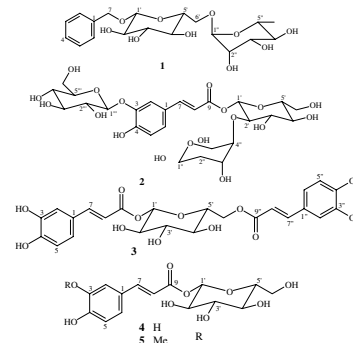
A biflavonoid, sulcatone A (**1**) was isolated from aerial part of *Ouratea sulcata* together with six known compounds. The antimicrobial activity of some of these compounds are reported.

**Phenylpropanoid glucosides from leaves of *Coussarea hydrangeifolia* (Rubiaceae)**

pp 1927–1932

Lidilhone Hamerski, Mauro Dionei Bomm, Dulce Helena Siqueira Silva,
Maria Cláudia Marx Young, Maysa Furlan, Marcos Nogueira Eberlin,
Ian Castro-Gamboa, Alberto José Cavaleiro, Vanderlan da Silva Bolzani*

Phenylpropanoid glycosides, 1'-*O*-benzyl- α -L-rhamnopyranosyl-(1 \rightarrow 6')- β -D-glucopyranoside (**1**) and α -L-xylopyranosyl-(4 \rightarrow 2')-(3-*O*- β -D-glucopyranosyl)-1'-*O*-*E*-caffeoyl- β -D-glucopyranoside (**2**), together with the known derivatives, 1,6-di-*O*-caffeoyl- β -D-glucopyranoside (**3**), 1-*O*-(*E*)-caffeoyl- β -D-glucopyranoside (**4**) and 1-*O*-(*E*)-feruloyl- β -D-glucopyranoside (**5**), were isolated from leaves of *Coussarea hydrangeifolia*. Their structures were determined by IR, HRESIMS, and 1D and 2D NMR experiments, and their antioxidant activities, evaluated by assaying the free radical scavenging capacity using the DPPH (1,1-diphenyl-2-picrylhydrazyl) radical as substrate. The antioxidant activities of **3** and **4** (IC₅₀ values of 15.0 and 19.2 μ M, respectively) were comparable to that of the standard positive control caffeic acid, whilst **2** and **5** were only weakly active and **1** was inactive.

**Isolation of an *N*-acetyl-D-glucosamine specific lectin from the rhizomes of *Arundo donax* with antiproliferative activity**

pp 1933–1940

Amandeep Kaur, Jatinder Singh*, Sukhdev Singh Kamboj, A.K. Sexana,
Renu Moti Pandita, M. Shamnugavel

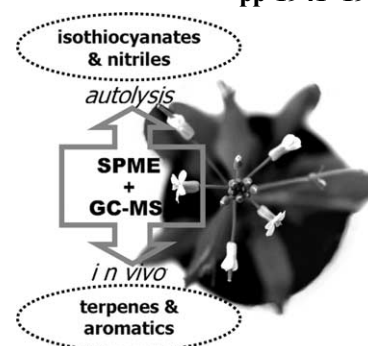
Present report is the first case wherein a lectin has been isolated from the rhizomes of a Gramineae member showing specificity towards GlcNAc similar to that of the cereal lectins from embryonal axes, but different from those isolated from roots and leaves. The lectin with exploitable growth inhibition potential towards human cancer cell lines and mitogenic potential towards human peripheral blood mononuclear cells along with a sugar specificity, which is reported to be involved in the diverse biological activities, has provided an interesting line of investigations with respect to lectin dependent processes.

**CHEMISTRY****Volatile profiling of *Arabidopsis thaliana* – Putative olfactory compounds in plant communication**

pp 1941–1955

Jens Rohloff*, Atle M. Bones

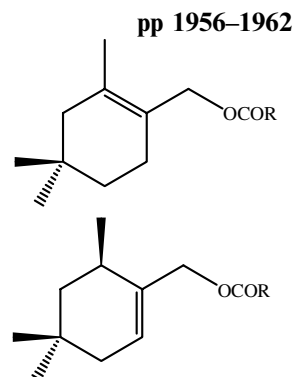
Volatile profiles of the plant model organism *Arabidopsis thaliana* were obtained by headspace SPME coupled with GC–MS. A broad range of more than 100 volatiles, derived from glucosinolate hydrolysis (isothiocyanates, nitriles), terpenes and aromatic structures were detected and tentatively identified.



β -Cyclolavandulyl and β -isocyclolavandulyl esters from *Peucedanum paniculatum* L., an endemic species to Corsica

Muriel Vellutini, Nicolas Baldovini, Dominique de Rocca Serra, Félix Tomi, Joseph Casanova*

Eight cyclolavandulyl esters (β -cyclolavandulyl and β -isocyclolavandulyl acetate, propionate, isobutyrate, isovalerate) were identified in the leaf and root oils of *Peucedanum paniculatum*. Their structures were elucidated by spectroscopic methods. The antimicrobial activity of leaf and root oils was evaluated against eleven microorganisms.

**OTHER CONTENTS**

Book review

Announcement: Phytochemical Society of North America

Author Index

Guide for Authors

* Corresponding author

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