Available online at www.sciencedirect.com

ScienceDirect

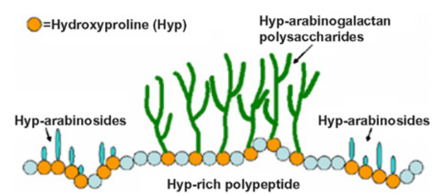
PHYTOCHEMISTRY

www.elsevier.com/locate/phytochem

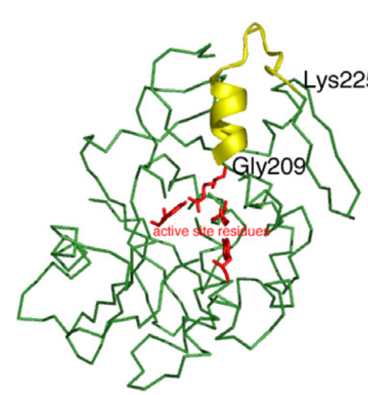
Phytochemistry Vol. 69, No. 8, 2008

Contents

PROTEIN BIOCHEMISTRY

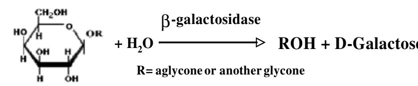


MOLECULAR GENETICS AND GENOMICS



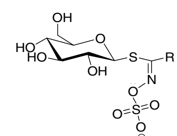
Dashzeveg Gantulga, Yusuf Turan, David R. Bevan, Asim Esen*

The enzymatic properties and substrate specificities of the *Arabidopsis* β-galactosidases encoded by At1g45130 (*Gal-5*) and At3g52840 (*Gal-2*) genes were studied. Organ-specific expression of the two genes was also examined by western blot analysis using peptide-specific antibodies. Recombinant Gal-5 and Gal-2 expressed in *Pichia pastoris* hydrolyzed various synthetic galactosides, galacto-oligosaccharides and cell wall-derived polysaccharides.

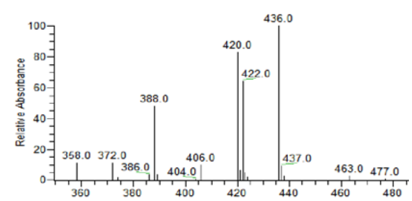


METABOLISM

Simone J. Rochfort*, V. Craige Trenerry, Michael Imsic, Joe Panozzo, Rod Jones



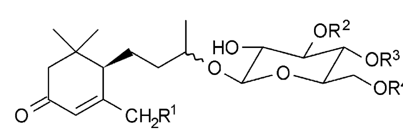
Glucosinolates are naturally occurring anionic secondary plant metabolites that generate a sulphated–glycoside during mass spectrometry fragmentation. This fragment ion can be utilised in qualitative and quantitative LCMS^n analysis and also in a rapid, highly sensitive parent ion mapping experiment to allow class targeted analysis of glucosinolates in crude plant extracts.



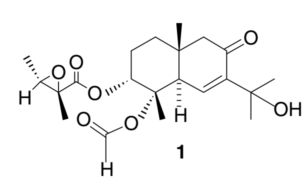
ECOLOGICAL BIOCHEMISTRY

Willibald Schliemann*, Barbara Kolbe, Jürgen Schmidt, Manfred Nimtz, Victor Wray

Colonization of leek roots by the mycorrhizal fungus *Glomus intraradices* resulted in the accumulation of an apocarotenoid mixture consisting of cyclohexenone and mycorradicin derivatives. The prevailing cyclohexenone derivatives are identified as glycosides and acylglycosides of blumenol C and related aglycones.

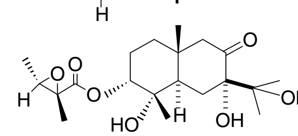


Nancy Vera, Rosana Misico, Manuel González Sierra, Yoshinori Asakawa, Alicia Bardón*



1

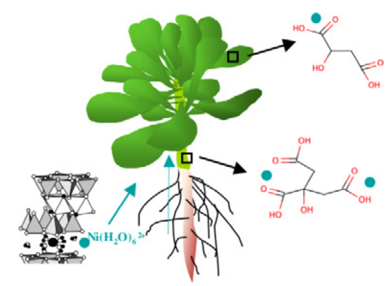
Eudesmane-type sesquiterpenoids **1** and **2**, together with 10 known eudesmanes, were isolated from *Pluchea sagittalis*. They were tested for their antifeedant activity on *Spodoptera frugiperda*. Most of the compounds deterred larval feeding at a concentration of 100 μg/g of diet.



2

Identification of nickel chelators in three hyperaccumulating plants: An X-ray spectroscopic study **pp 1695–1709**

Emmanuelle Montargès-Pelletier*, Vanessa Chardot, Guillaume Echevarria, Laurent J. Michot, Allan Bauer, Jean-Louis Morel

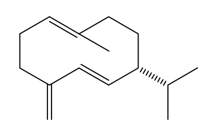


Hyperaccumulators *Thlaspi caerulescens*, *Alyssum murale* and *Leptoplax emarginata* were grown in rhizoboxes, on soil enriched with nickel bearing smectite. A direct investigation method demonstrated that nickel cations were majoritarily stored within leaves as Ni(malate) complexes whereas Ni(citrate) complexes could be revealed within stems of *L. emarginata*.

BIOACTIVE PRODUCTS

Antiectoparasitic activity of the gum resin, gum haggar, from the East African plant, *Commiphora holtziana* **pp 1710–1715**

Michael A. Birkett*, Sate Al Abassi, Thomas Kröber, Keith Chamberlain, Antony M. Hooper, Patrick M. Guerin, Jan Pettersson, John A. Pickett, Robin Slade, Lester J. Wadhams

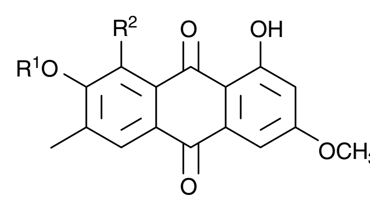


(+)-germacrene-D

The repellent activity of gum haggar, a resin produced by *Commiphora holtziana* (Burseraceae), was assessed using the cattle tick, *Boophilus microplus*, and the red poultry mite, *Dermanyssus gallinae*. The resin was significantly repellent, with GC–MS/GC–NMR analysis revealing the presence of 15 sesquiterpene hydrocarbons, including (+)-germacrene-D, a potent arthropod repellent.

Bioactive metabolites from the endophytic fungus *Ampelomyces* sp. isolated from the medicinal plant *Urospermum picroides* **pp 1716–1725**

Amal H. Aly, RuAngelie Edrada-Ebel, Victor Wray, Werner E.G. Müller, Svitlana Kozytska, Ute Hentschel, Peter Proksch*, Rainer Ebel*

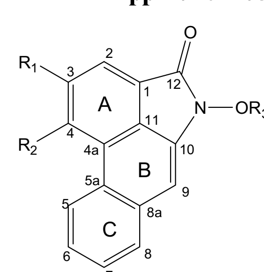


macrosporin (R^1= R^2 = H)
macrosporin-7-O-sulfate (R^1= $SO_3^-Na^+$, R^2 = H)
3-O-methylalaternin (R^1= H, R^2 = OH)
3-O-methylalaternin-7-O-sulfate (R^1= $SO_3^-Na^+$, R^2 = OH)

Extracts of the fungal endophyte *Ampelomyces* sp. yielded 14 natural products out of which six (macrosporin-7-*O*-sulfate, 3-*O*-methylalaternin-7-*O*-sulfate, ampelopyrone, desmethyldiaportinol, desmethyldichlorodiaportin, and ampelanol) were unknown compounds. The known macrosporin and 3-*O*-methylalaternin were also identified in the host plant *Urospermum picroides*, indicating that they are also produced by the endophyte *in planta*.

Bioactive aristolactams from *Piper umbellatum* **pp 1726–1731**

Turibio Kuiate Tabopda*, Joseph Ngoupayo, Jiawei Liu, Anne-Claire Mitaine-Offer, Sheraz A. Khan Tanoli, Shamsun Nahar Khan, Muhammad Shaiq Ali, Bonaventure Tchaleu Ngadjui, Etienne Tsamo, Marie-Aleth Lacaille-Dubois, Bang Luu



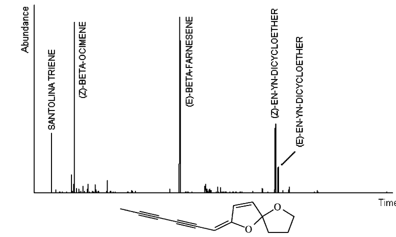
1 $R_1 = R_2 = OCH_3$, R_3 = H
2 $R_1 = OCH_3$, R_2 = OH, R_3 = H
3 $R_1 = R_2$ = OH, $R_3 = CH_3$
4 $R_1 + R_2$ = -OCH_2O- $R_3 = CH_3$
5 $R_1 + R_2$ = -OCH_2O- R_3 = H

Four alkaloids, named piperumbellactam A–D (**1**–**4**), were isolated from branches of *Piper umbellatum* together with 12 known compounds. Compounds **1**–**5** were investigated for their α-glucosidase inhibition, antioxidant and antifungal activities.

Screening of chemical composition, antimicrobial and antioxidant activities of *Artemisia* essential oils **pp 1732–1738**

Daíse Lopes-Lutz, Daniela S. Alviano, Celuta S. Alviano, Paul P. Kolodziejczyk*

The chemical composition of essential oils isolated from aerial parts of seven wild sages (*Artemisia* sp.) grown in Western Canada was investigated by GC–MS. The oils had inhibitory effects on the growth of bacteria, yeast, dermatophytes, *Fonsecaea pedrosoi* and *Aspergillus niger*. In addition, antioxidant and radical scavenging activities were determined.

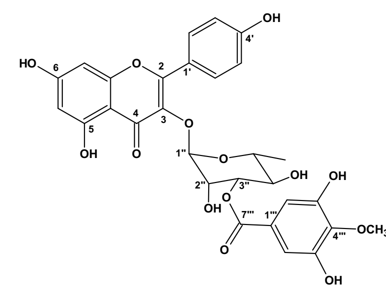


GC-MS determination of (Z) and (E) –en-yn-dicycloethers in A. biennis

Flavonols from *Pterogyne nitens* and their evaluation as myeloperoxidase inhibitors **pp 1739–1744**

Luis Octávio Regasini, José Carlos Rebuglio Vellosa, Dulce Helena Siqueira Silva, Maysa Furlan, Olga Maria Mascarenhas de Oliveira, Najeh Maissar Khalil, Iguatemy Lourenço Brunetti, Maria Claudia Marx Young, Eliezer Jesus Barreiro, Vanderlan Silva Bolzani*

A myeloperoxidase inhibitory kaempferol derivative, namely pterogynoside (**1**), was isolated from fruits of *Pterogyne nitens*, along with six known flavonols, kaempferol, afzelin, kaempferitrin, quercetin, isoquercetrin and rutin.

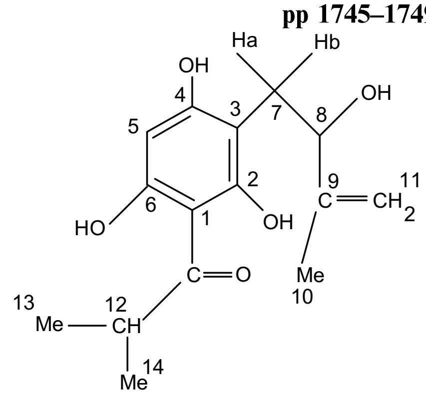


CHEMISTRY

Antimicrobial acylphloroglucinols and dibenzyloxy flavonoids from flowers of *Helichrysum gymnocomum* **pp 1745–1749**

Siegfried E. Drewes*, Sandy F. van Vuuren

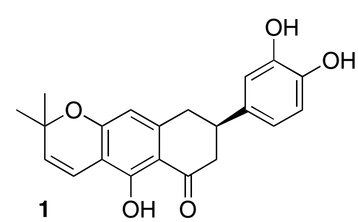
Four flavonoids and two acylphloroglucinols from *Helichrysum gymnocomum* are described. Two of the flavonoids are previously unknown in Nature and one of the acylphloroglucinols is reported for the first time. The six compounds have MIC values below 64 μg/ml against a selection of ten pathogens.



Biologically active tetralones from New Caledonian *Zygogynum* spp. **pp 1750–1755**

Noureddine Allouche, Barbara Morleo, Odile Thoison, Vincent Dumontet, Olivier Nosjean, Françoise Guéritte, Thierry Sévenet, Marc Litaudon*

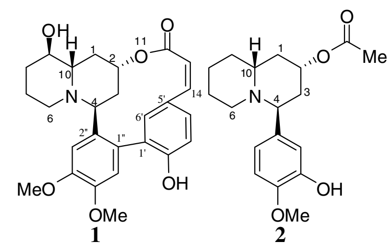
Four phenyl-3-tetralones (**1**–**4**) were isolated from the bark and leaves of various species of *Zygogynum* (Winteraceae). The structures were elucidated by extensive mono- and bi-dimensional spectroscopy. They exhibited binding affinity for peroxisome proliferator-activated receptor (PPAR-γ).



1

Alkaloids from *Heimia salicifolia* **pp 1756–1762**

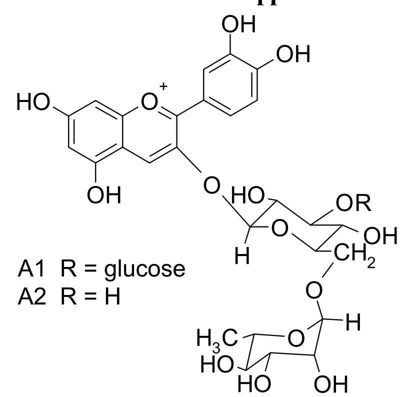
Chidananda Swamy Rumalla, Atul N. Jadhav, Troy Smillie, Frank R. Fronczek, Ikhlas A. Khan*



Two alkaloids, 9β,2′-dihydroxy-4″,5″-dimethoxy-lythran-12-one (**1**) and (2*S*, 4*S*, 10*R*)-4-(3-hydroxy-4-methoxyphenyl)-quinolizidin-2-acetate (**2**), were isolated from *Heimia salicifolia*.

Major anthocyanins from purple asparagus (*Asparagus officinalis*) **pp 1763–1766**

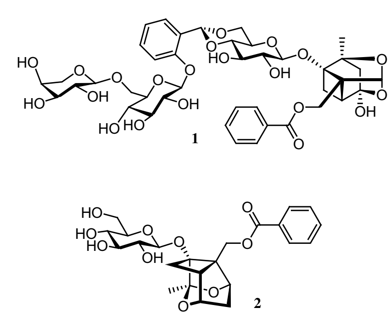
Yumi Sakaguchi*, Yukio Ozaki, Ikuo Miyajima, Masaatsu Yamaguchi, Yuko Fukui, Keiko Iwasa, Satoru Motoki, Takashi Suzuki, Hiroshi Okubo



Anthocyanins from the spears of purple asparagus (*Asparagus officinalis*) were isolated and identified as cyanidin 3-[3″-(*O*-β-D-glucopyranosyl)-6″-(*O*-α-L-rhamnopyranosyl)-*O*-β-D-glucopyranoside] and cyanidin 3-rutinoside, respectively. ORAC assays suggest that they have high antioxidant activities.

Monoterpene glycosides from *Paeonia hybrida* **pp 1767–1772**

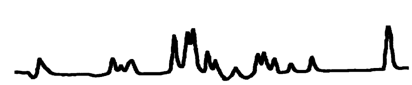
Mamoru Okasaka, Yoshiki Kashiwada, Olimjon K. Kodzhimatov, Ozodbek Ashurmetov, Yoshihisa Takaishi*



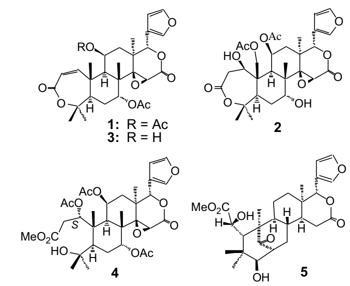
Monoterpene glycosides (**1**–**5**, and **7**), including five paeoniflorin-related compounds, and 14 known compounds from the roots of *Paeonia hybrida* were isolated; their structures were established based on spectroscopic studies.

Simultaneous quantification of major phytohormones and related compounds in crude plant extracts by liquid chromatography–electrospray tandem mass spectrometry **pp 1773–1781**

Xiangqing Pan, Ruth Welti, Xuemin Wang*



A rapid and sensitive method was developed for simultaneous quantification of multiple classes of phytohormones and some related metabolites in crude plant extracts without purification or derivatization. The technology was applied to analyze biotic and abiotic stress-induced changes of phytohormones in Arabidopsis tissues, starting with 50–100 mg fresh tissue.



OTHER CONTENTS

* 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

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®.*

ELSEVIER

ISSN 0031-9422