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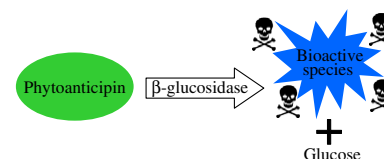
REVIEW

 β -Glucosidases as detonators of plant chemical defense

pp 1795–1813

Anne Vinther Morant, Kirsten Jørgensen, Charlotte Jørgensen, Suzanne Michelle Paquette, Raquel Sánchez-Pérez, Birger Lindberg Møller*, Søren Bak

This review provides a detailed update on the structure, function and activity of the β -glucosidases involved in activation of the four major classes of phytoanticipins: cyanogenic glucosides, benzoxazinoid glucosides, avenacosides and glucosinolates.



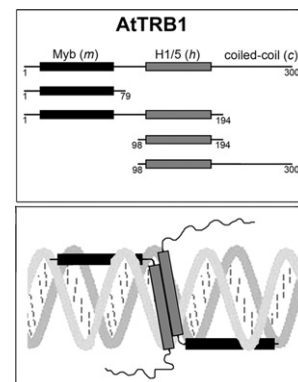
PROTEIN BIOCHEMISTRY

Functional characterization of domains in AtTRB1, a putative telomere-binding protein in *Arabidopsis thaliana*

pp 1814–1819

Iva Mozgová, Petra Procházková Schruppfová, Ctirad Hofr, Jiří Fajkus*

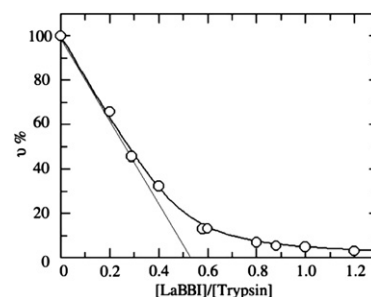
AtTRB1 is a telomeric-dsDNA-binding protein which is able to form multimers. The specific binding to telomeric DNA is primarily conducted by the Myb domain, while the multimerization and sequence-non-specific interactions with DNA are mediated by the H1/5 domain.

**Identification and characterization of a Bowman–Birk inhibitor active towards trypsin but not chymotrypsin in *Lupinus albus* seeds**

pp 1820–1825

Alessio Scarafoni*, Alessandro Consonni, Valerio Galbusera, Armando Negri, Gabriella Tedeschi, Patrizia Rasmussen, Chiara Magni, Marcello Duranti

The paper describes the purification, structural characterization and inhibitory properties of a trypsin inhibitor belonging to the Bowman–Birk inhibitors class from *Lupinus albus* L. The inhibitor inhibits two trypsin molecules simultaneously, with a K_d of 4.2 ± 0.4 nM, but not chymotrypsin. Its thermal and pH stabilities have been also assessed.

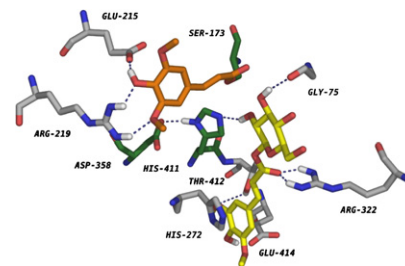


Activities of *Arabidopsis* sinapoylglucose:malate sinapoyltransferase shed light on functional diversification of serine carboxypeptidase-like acyltransferases

pp 1826–1831

Felix Stehle, Wolfgang Brandt, Jürgen Schmidt, Carsten Milkowski, Dieter Strack*

Analysis of the catalytic properties of *Arabidopsis* SMT revealed, besides synthesis of sinapoyl- α -malate, minor hydrolytic and disproportionation activities to produce free sinapic acid and 1,2-di-*O*-sinapoyl- β -glucose, respectively. The SMT homology structure model illustrates the possible binding of two 1-*O*-sinapoyl- β -glucose molecules in the active site and the intermolecular reaction of the two glucose esters. We discuss that the *SMT* gene emerged from recent gene duplication events and might be, with four other tandemly arranged SCPL acyltransferase genes, still on for functional development.

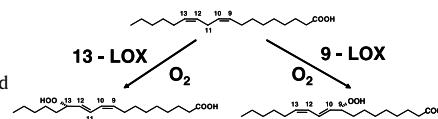


Properties of a mini 9R-lipoxygenase from *Nostoc* sp. PCC 7120 and its mutant forms

pp 1832–1837

Alexandra-Zoi Andreou, Marian Vanko, Lydia Bezakova, Ivo Feussner*

Analysis of the carboxy-terminal lipoxygenase domain from *Nostoc punctiforme* revealed determinants for regio- and stereospecificity.



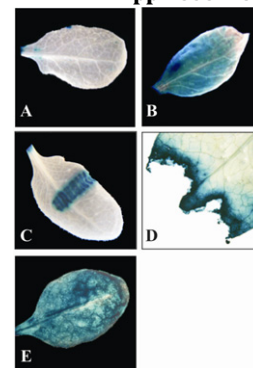
MOLECULAR GENETICS AND GENOMICS

Monoterpene-induced molecular responses in *Arabidopsis thaliana*

pp 1838–1849

Kimberley-Ann Godard, Richard White, Jörg Bohlmann*

Volatiles of the monoterpenes myrcene and ocimene induce a substantial change of the *Arabidopsis thaliana* transcriptome as detected by microarray analysis.



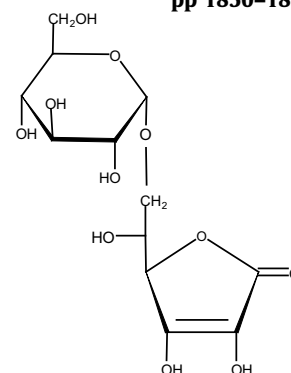
METABOLISM

Ascorbic acid conjugates isolated from the phloem of *Cucurbitaceae*

pp 1850–1858

Robert D. Hancock*, John A. Chudek, Paul G. Walker, Simon D.A. Pont, Roberto Viola

A series of α -ascorbic acid analogues were isolated from phloem exudates of *Cucurbitaceae* fruit. The most abundant analogue from *Cucurbita pepo* was a 6-glucosyl conjugate. The potential role of ascorbate glycosides in long-distance transport is discussed in relation to the polymer trap theory of phloem loading.

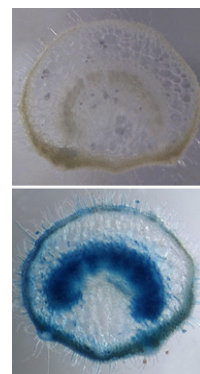


The AOC promoter of tomato is regulated by developmental and environmental stimuli

pp 1859–1869

Irene Stenzel, Bettina Hause, Reinhard Proels, Otto Miersch, Mariko Oka, Thomas Roitsch, Claus Wasternack*

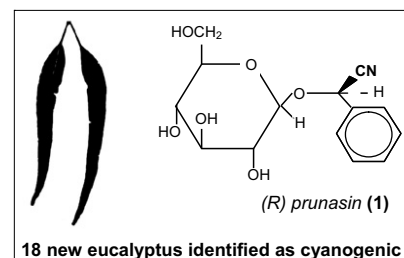
An essential step in jasmonate biosynthesis is catalyzed by the allene oxide cyclase (AOC). The tomato AOC promoter was isolated, and its activity was analyzed in tomato and tobacco in respect to environmental and developmental stimuli using the GUS reporter gene. In cross-sections of tomato petioles, activity was detected preferentially in vascular bundles but only upon wounding of a leaflet (below).

**CHEMOTAXONOMY****Frequency and distribution of cyanogenic glycosides in *Eucalyptus* L'Hérit**

pp 1870–1874

Roslyn M. Gleadow*, J. Haburjak, J.E. Dunn, M.E. Conn, Eric E. Conn

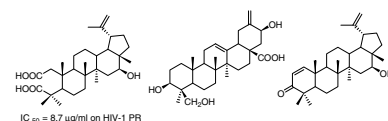
Twenty-three species of *Eucalyptus* are now known to be cyanogenic (ca. 4% of the genus). All except two are within the subgenus *Symphyomyrtus*. This distribution is consistent with recent phylogenetic treatments and has implications for conservation and management.

**BIOACTIVE PRODUCTS****Anti-HIV-1 protease triterpenoids from *Stauntonia obovatifoliola* Hayata subsp. *intermedia***

pp 1875–1879

Ying Wei, Chao-mei Ma, De-yuan Chen, Masao Hattori*

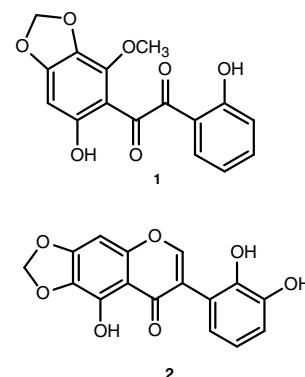
Three triterpenoids were isolated along with 11 known ones from the stems of *Stauntonia obovatifoliola*. Ten of them showed inhibitory activity on HIV protease.

**A benzil and isoflavone from *Iris tenuifolia***

pp 1880–1885

Muhammad Iqbal Choudhary*, Sumaira Hareem, Hina Siddiqui, Shazia Anjum, Shamsher Ali, Atta-ur-Rahman, Mudassir Israr Zaidi

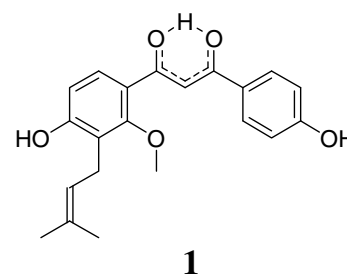
Two compounds tenuifodione (1) and tenuifone (2), and 12 known compounds, were isolated from the whole plant of *Iris tenuifolia*. Compounds **2**, **3** and **11** have shown a considerable DPPH radical scavenging activity.



pp 1886-1889

Malcolm S. Buchanan, Anthony R. Carroll, Gregory A. Fechner, Anthony Boyle, Moana Simpson, Rama Addepalli, Vicky M. Avery, Paul I. Forster, Gordon P. Guymer, Tony Cheung, Huwei Chen, Ronald J. Quinn*

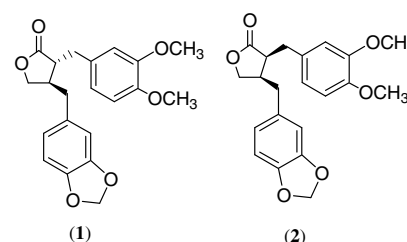
The roots of *Hovea parvicalyx* yielded 2'-methoxy-3'-prenyl-licodione (**1**) and 2'-methoxy-3',3''-diprenyl-licodione (**2**), two prenylated β -hydroxychalcone compounds, together with the known flavanone (5*S*)-glabrol (**3**). These compounds showed lcmt inhibitory activity.



pp 1890-1894

R. da Silva, J. Saraiva, S. de Albuquerque, C. Curti, P.M. Donate, T.N.C. Bianco, J.K. Bastos, M.L.A. Silva

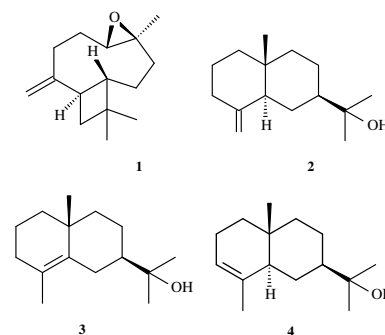
The trypanocidal activity of *trans*- (**1**) and *cis*- (**2**) methylpluviatolide isomers was evaluated against both trypomastigote forms and gGAPDH of *Trypanosoma cruzi*. The cytotoxicity of the compounds and its effect on peroxide and NO production were also evaluated. *Trans* stereoisomers displayed trypanocidal activity and low toxicity. Only the (-)-enantiomer was active against the parasite.



pp 1895-1899

Emmanuel V. Costa, Sirlei D. Teixeira, Francisco A. Marques, Marta C.T. Duarte, Camila Delarmelina, Maria Lúcia B. Pinheiro, José R. Trigo, Beatriz Helena L.N. Sales Maia*

Isolation and identification of caryophyllene oxide (**1**), β -eudesmol (**2**), γ -eudesmol (**3**) and α -eudesmol (**4**) from the *Guatteropsis* species are reported. The oils showed significant activities against *Rhodococcus equi*, *Enterococcus hirae*, *Staphylococcus epidermidis* and *Bacillus subtilis*.

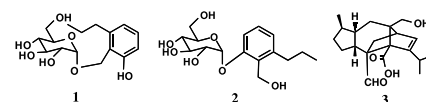


CHEMISTRY

pp 1900-1902

Wipapan Pongcharoen, Vatcharin Rukachaisirikul*, Souwalak Phongpaichit, Till Kühn, Matthias Pelzing, Jariya Sakayaroj, Walter C. Taylor

Glucoside derivatives, xylarosides A (**1**) and B (**2**), were isolated from the broth extract of the endophytic fungus *Xylaria* sp. PSU-D14 together with two known compounds. The structures were assigned by spectroscopic methods. Sordarin (**3**), one of the known metabolites, exhibited antifungal activity against *Candida albicans* ATCC90028 with a MIC value of 32 µg/ml.

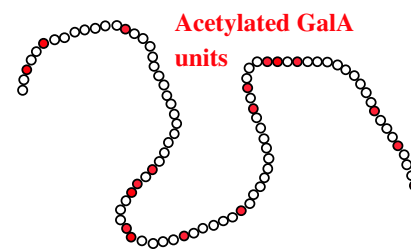


Evidence for a blockwise distribution of acetyl groups onto homogalacturonans from a commercial sugar beet (*Beta vulgaris*) pectin

pp 1903–1909

Marie-Christine Ralet*, Marie-Jeanne Crépeau, Estelle Bonnin

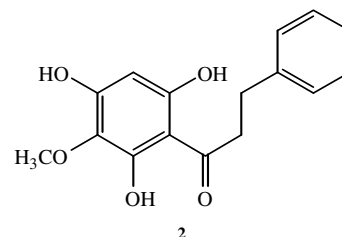
The oligogalacturonates generated by three PGs were quantified and their sequences determined. An “overlap method” was used to assess acetyl groups distribution and a blockwise repartition of those onto sugar beet pectin homogalacturonan is proposed.

**Flavonoids and terpenoids from *Helichrysum forskahlii***

pp 1910–1914

Adnan J. Al-Rehaily*, Omar A. Albishi, Mahmoud M. El-Olemy, Jaber S. Mossa

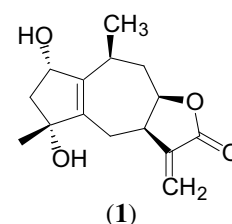
Three flavonoids (**1–3**), along with 10 known flavonoids, three triterpenes and one sesquiterpene were isolated from *Helichrysum forskahlii* (J.F. Gmel) Hilliard and Burtt. The structures of the compounds were determined by spectral analysis, including 2D NMR data.

**Guaianolide sesquiterpenes from *Pulicaria crispa* (Forssk.) Oliv.**

pp 1915–1918

Michael Stavri, K.T. Mathew, Andrew Gordon, Steven D. Shnyder, Robert A. Falconer, Simon Gibbons*

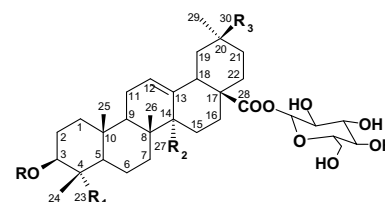
A phytochemical study of the asteraceous herb *Pulicaria crispa* (Forssk.) Oliv. resulted in the characterisation of three guaianolide sesquiterpenes, 2 α ,4 α -dihydroxy-7 α H,8 α H,10 α H-guaia-1(5),11(13)-dien-8 β ,12-olide (**1**), 1 α ,2 α -epoxy-4 β -hydroxy-5 α H,7 α H,8 α H,10 α H-guaia-11(13)-en-8 β ,12-olide (**2**) and 5,10-*epi*-2,3-dihydroaromatin (**3**) by extensive 1 and 2D NMR experiments.

**Triterpene saponins from *Chenopodium quinoa* Willd.**

pp 1919–1926

Tiwatt Kuljanabagavad, Piyanut Thongphasuk, Walee Chamulitrat, Michael Wink*

Four triterpene saponins (**1–4**) from different parts of *Chenopodium quinoa* (flowers, fruits, seed coats, and seeds), together with sixteen known triterpene saponins (**5–20**), were isolated and their structures have been determined by 1D- and 2D-NMR and MS analysis. Triterpene saponins with aldehyde groups showed cytotoxicity and induction of apoptosis.

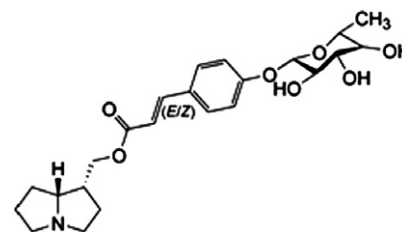


R	R ₁	R ₂	R ₃
1 Glc(1→3)Ara	CHO	CH ₃	CH ₃
2 Glc(1→3)Ara	CH ₃	CHO	CH ₃
3 Ara	CH ₃	CH ₃	COOCH ₃
4 GlcA	CH ₃	CH ₃	COOCH ₃

E/Z-Thesinine-O-4'- α -rhamnoside, pyrrolizidine conjugates produced by grasses (Poaceae)**pp 1927–1932**

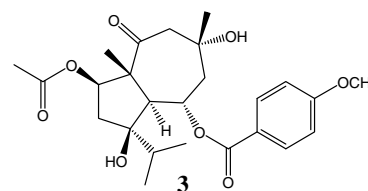
Albert Koulman, Claudine Seeliger, Patrick J.B. Edwards, Karl Fraser, Wayne Simpson, Linda Johnson, Mingshu Cao, Susanne Rasmussen, Geoffrey A. Lane*

E/Z-Thesinine-O-4'- α -rhamnoside, saturated pyrrolizidine conjugates from grasses (Poaceae) are reported.

**Sesquiterpenes from aerial parts of *Ferula vesceritensis*****pp 1933–1938**

Karima Oughlissi-Dehak, Philippe Lawton, Serge Michalet, Christine Bayet, Nicole Darbour, Mahfoud Hady-Mahammed, Yacine A. Badjah-Hadj-Ahmed, Marie-Geneviève Dijoux-Franca, David Guilet*

Five daucane derivatives have been isolated from the aerial parts of *Ferula vesceritensis* (Apiaceae).

**OTHER CONTENTS****Erratum****pp 1939–1940****Announcement: The Phytochemical Society of Europe****pp I–II**

* Corresponding author

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