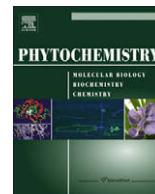




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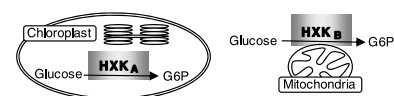
MOLECULES OF INTEREST

Putting plant hexokinases in their proper place

pp 2649–2654

David Granot*

Most plants have only two types of hexokinases (HXK), the only catalysts of glucose phosphorylation; type A, located in the chloroplast stroma, and type B, associated with the mitochondria, but also found in the nucleus. The latter are involved in sugar sensing.



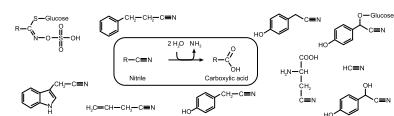
REVIEW

Primary or secondary? Versatile nitrilases in plant metabolism

pp 2655–2667

Markus Piotrowski*

Plant nitrilases, once thought to be key enzymes in biosynthesis of the auxin indole-3-acetic acid, are now known to fulfill several functions in primary and secondary metabolism. This review summarizes research on plant nitrilases from the beginning until now, illustrating the evolution of nitrilase function *in planta* and in the literature.



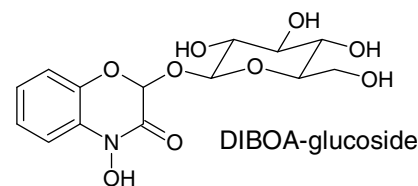
MOLECULAR GENETICS AND GENOMICS

Benzoxazinoid biosynthesis in dicot plants

pp 2668–2677

Katrin Schullehner, Regina Dick, Florian Vitzthum, Wilfried Schwab, Wolfgang Brandt, Monika Frey*, Alfons Gierl

The two initial steps in DIBOA-glucoside biosynthesis are analogous in grasses and in dicots: Indole is the first intermediate that is oxygenated by a cytochrome P450 enzyme. The indole-3-glycerolphosphate lyase CoBX1 evolved independently from its orthologous function in maize.



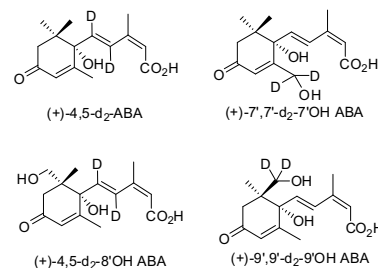
METABOLISM

Hormonal regulation of oil accumulation in *Brassica* seeds: Metabolism and biological activity of ABA, 7'-, 8'- and 9'-hydroxy ABA in microspore derived embryos of *B. napus*

pp 2678–2688

Ashok S. Jadhav, David C. Taylor, Michael Giblin, Alison M.R. Ferrie, Stephen J. Ambrose, Andrew R.S. Ross, Ken M. Nelson, L. Irina Zaharia, Nirmala Sharma, Maureen Anderson, Pierre R. Fobert, Suzanne R. Abrams*

Isotopically labeled ABA and its hydroxylated metabolites, 7'-, 8'- and 9'-hydroxy ABA, were supplied to microspore-derived embryos of *Brassica napus* cv Hero. All compounds included expression of oleosin and fatty acid elongase genes and increased the accumulation of triacylglycerols and very long chain fatty acids.



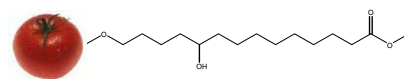
ECOLOGICAL BIOCHEMISTRY

NMR characterization of hydration and thermal stress in tomato fruit cuticles

pp 2689–2695

Ruth E. Stark*, Bin Yan, Suzanne M. Stanley-Fernandez, Zhen-jia Chen, Joel R. Garbow

A comprehensive ¹³C NMR relaxation study of tomato fruit cuticle has been made to assess the impact of hydration and thermal stresses on motions at individual polymer sites that are expected to influence the functional integrity of this protective plant membrane.



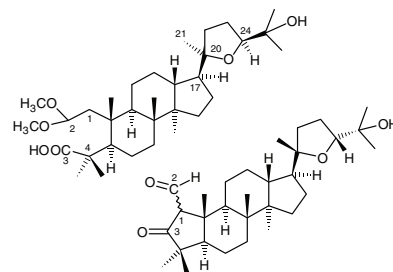
CHEMOTAXONOMY

Silvaglines and related 2,3-secodammarane derivatives – unusual types of triterpenes from *Aglaia silvestris*

pp 2696–2703

Silvia Pointinger, Somnuk Promdang, Srunya Vajrodaya, Caroline M. Pannell, Otmar Hofer*, Kurt Mereiter, Harald Greger*

The 2,3-secodammarane aglasilvinic acid and the related silvaglines with a five-membered A-ring represented typical chemical features of *A. silvestris* accompanied by a series of 3,4-secodammaranes, a pregnane steroid and two sesquiterpenes. Comparison of six different plant collections revealed the existence of two chemo-types characterised either by 20R or 20S configuration in all major triterpenes.



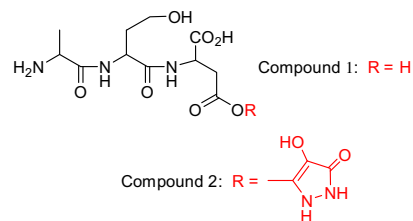
BIOACTIVE PRODUCTS

An antibacterial pyrazole derivative from *Burkholderia glumae*, a bacterial pathogen of rice

pp 2704–2707

Robin E. Mitchell*, David R. Greenwood, Vijayalekshmi Sarojini

Two compounds from liquid cultures of *Burkholderia glumae* were determined to be L-alanyl-L-homoserinyl-L-aspartic acid, and 3-[L-alanyl-L-homoserinyl-L-aspartyl-β-carboxy]-4-hydroxy-5-oxopyrazole, the latter having antibacterial properties.

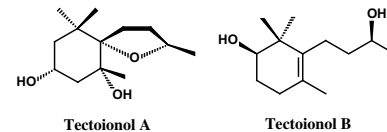


Bioactive apocarotenoids from *Tectona grandis*

pp 2708–2715

Francisco A. Macías*, Rodney Lacret, Rosa M. Varela, Clara Nogueiras, Jose M.G. Molinillo

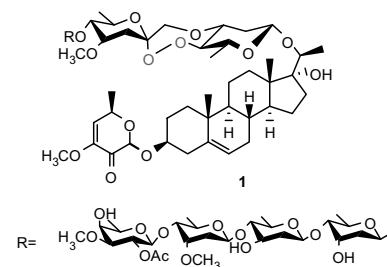
The bioactive fractions of *Tectona grandis* have yielded seven apocarotenoids, two of which have been isolated for the first time as natural products (tectoionols A and B). The absolute configuration of tectoionol A was determined using a modified Mosher methodology. The general bioactivities of isolated compounds have been studied using etiolated wheat coleoptiles and the phytotoxicity of those compounds that have high levels of activity have been evaluated on standard target species.

**Immunosuppressive pregnane glycosides from *Periploca sepium* and *Periploca forrestii***

pp 2716–2723

Jiaquan Feng, Rujun Zhang, Yu Zhou, Zhenhua Chen, Wei Tang, Qunfang Liu, Jian-Ping Zuo*, Weimin Zhao*

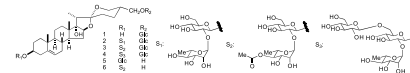
Five pregnane glycosides, periperoxide A–E (**1–5**) with T cell proliferation inhibitory activity and three oligosaccharides, perisaccharide A–C (**6–8**) were identified from *Periploca sepium* and *Periploca forrestii*.

**Steroidal glycosides from the underground parts of *Trillium erectum* and their cytotoxic activity**

pp 2724–2730

Akihito Yokosuka*, Yoshihiro Mimaki*

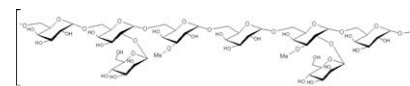
The chemical structures of 20 steroidal glycosides, including six compounds, isolated from *Trillium erectum*, and their cytotoxic activity against HL-60 cell are reported.

**A 3-O-methylated mannogalactan from *Pleurotus pulmonarius*: Structure and antinociceptive effect**

pp 2731–2736

F.R. Smiderle, L.M. Olsen, E.R. Carbonero, R. Marcon, C.H. Baggio, C.S. Freitas, A.R.S. Santos, G. Torri, P.A.J. Gorin, M. Iacomini*

A mannogalactan was extracted from the basidiomycete *Pleurotus pulmonarius*. It had a main chain of (1 → 6)-linked α -D-galactopyranosyl and 3-O-methyl- α -D-galactopyranosyl units, both of which were partially substituted at O-2 by β -D-mannopyranosyl non-reducing ends. This polysaccharide gave rise to a nociceptive response on the acetic acid-induced writhing reaction in mice.



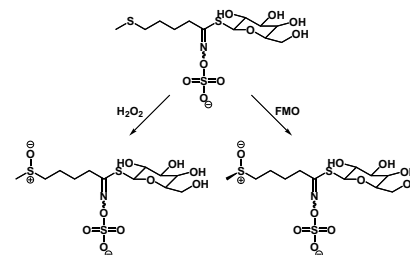
CHEMISTRY

Determination of the absolute configuration of the glucosinolate methyl sulfoxide group reveals a stereospecific biosynthesis of the side chain

pp 2737–2742

Fredd Vergara, Michael Wenzler, Bjarne G. Hansen, Daniel J. Kliebenstein, Barbara A. Halkier, Jonathan Gershenzon, Bernd Schneider*

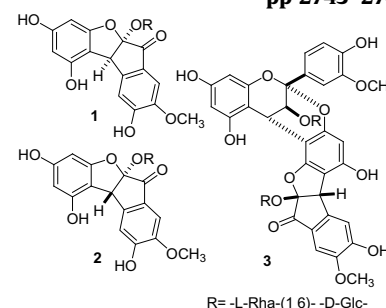
Oxidation of the sulfide function in the side chain of 4-methylthiobutylglucosinolate, which is catalyzed by a flavin monooxygenase in *Arabidopsis thaliana*, proceeds stereospecifically to produce (*R*_S)-4-methylsulfinylbutylglucosinolate exclusively.

**Phenolic glycosides from *Kaempferia parviflora***

pp 2743–2748

Toshiaki Azuma, Yasuo Tanaka, Hiroe Kikuzaki*

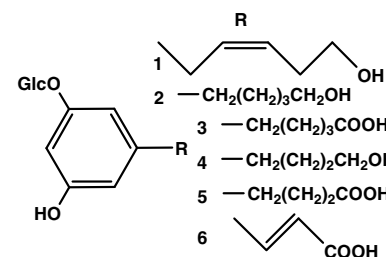
Three phenolic glycosides (**1–3**), together with two known flavonol glycosides were isolated from the H₂O-soluble fraction of rhizomes of *Kaempferia parviflora*.

**Grevillosides A–F: Glucosides of 5-alkylresorcinol derivatives from leaves of *Grevillea robusta***

pp 2749–2752

Yukiko Yamashita, Katsuyoshi Matsunami, Hideaki Otsuka*, Takakazu Shinzato, Yoshio Takeda

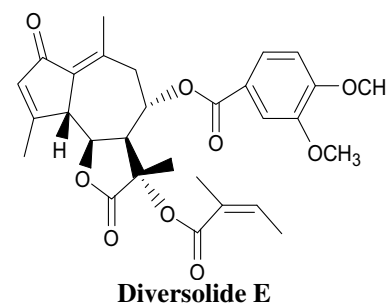
From leaves of *Grevillea robusta*, six 5-alkylresorcinol glucosides, named grevillosides A–F, were isolated. Their structures were elucidated by spectroscopic analyses.

**Diversolidos A–G, guaianolides from the roots of *Ferula diversivittata***

pp 2753–2757

Mehrdad Iranshahi*, Seyyed Tahmineh Hosseini, Ahmad Reza Shahverdi, Kamyar Molazade, Saleha Suleman Khan, Viqar Uddin Ahmad

Seven sesquiterpene lactone derivatives, diversolidos A–G (**1–7**), together with two known compounds, diversin (**8**) and stigmaterol, were isolated from the roots of *Ferula diversivittata*. These compounds were tested for their in vitro antifungal and antibacterial activities.



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* Corresponding author

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