

## Phytochemistry Vol. 70, No. 3, 2009

## Contents

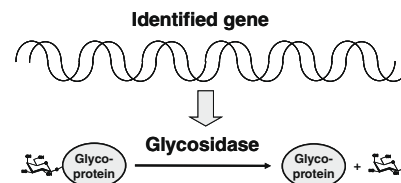
## MOLECULES OF INTEREST

## Plant glycosidases acting on protein-linked oligosaccharides

pp 318–324

Renaud Léonard\*, Richard Strasser, Friedrich Altmann

This review covers plant glycosidases acting on N-glycoproteins or arabinogalactan proteins whose genes have been identified and discusses physiological roles or in vitro uses.



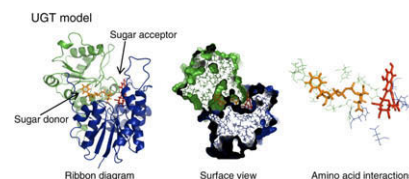
## REVIEW

## Substrate specificity of plant UDP-dependent glycosyltransferases predicted from crystal structures and homology modeling

pp 325–347

Sarah A. Osmani, Søren Bak, Birger Lindberg Møller\*

Plant UGTs glycosylate a wide range of acceptor molecules using several different sugars. This review summarizes current knowledge of the relationship between 3D structure and substrate specificity and examines the accuracy of plant UGT structures derived from homology modeling by comparison to the crystal structures currently available.



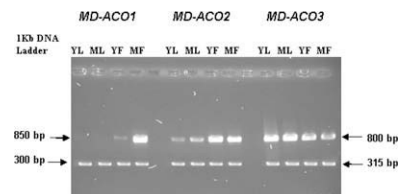
## PROTEIN BIOCHEMISTRY

Characterization of the 1-aminocyclopropane-1-carboxylic acid (ACC) oxidase multigene family of *Malus domestica* Borkh

pp 348–360

Jan E. Binnie, Michael T. McManus\*

The expression of two ACO genes, in addition to the well characterized *MD-ACO1*, and their protein products is reported. While *MD-ACO1* is expressed in mature fruit, the other ACC oxidase genes are also expressed in fruit and in leaf tissues and the significance for ethylene production in apple is discussed.

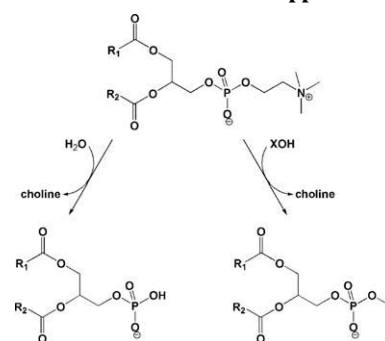


### Substrate specificity in phospholipid transformations by plant phospholipase D isoenzymes

pp 361–365

Martin Dippe, Renate Ulbrich-Hofmann\*

In many plants, multiple forms of phospholipase D have been found. Studies on the specificity of two isoenzymes from white cabbage and two ones from opium poppy suggest a physiological relevance of the different hydrolytic and transphosphatidylase activities.

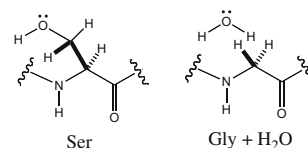


### Investigating the conservation pattern of a putative second terpene synthase divalent metal binding motif in plants

pp 366–369

Ke Zhou, Reuben J. Peters\*

Functional analysis of a putative second terpene synthase (TPS) divalent metal binding motif is presented. Specifically, to probe the surprising observation that plant TPS occasionally contain Gly in place of an otherwise conserved Thr/Ser that has been observed to directly ligate a divalent metal ion.



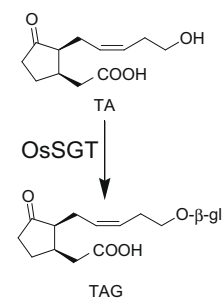
## MOLECULAR GENETICS AND GENOMICS

### Purification and cDNA cloning of a wound inducible glucosyltransferase active toward 12-hydroxy jasmonic acid

pp 370–379

Yoshiya Seto, Shigeki Hamada, Hideyuki Matsuura\*, Mana Matsushige, Chizuru Satou, Kosaku Takahashi, Chikara Masuta, Hiroyuki Ito, Hirokazu Matsui, Kensuke Nabeta

The universal existence of 12-hydroxyjasmonic acid (tuberonic acid, TA) and its glucoside (TAG) and TA glucosyltransferase activity are demonstrated. The glucosyltransferase, which is active toward TA, was purified from rice cell cultures and characterized as a putative salicylic acid (SA) glucosyltransferase (OsSGT). OsSGT was active toward TA and also SA. Expression analysis of mRNA of *OsSGT* established that its gene expression was induced by wounding stress.

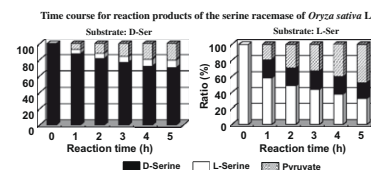


### Occurrence of D-serine in rice and characterization of rice serine racemase

pp 380–387

Yoshitaka Gogami, Katsuyoshi Ito, Yuji Kamitani, Yuki Matsushima, Tadao Oikawa\*

Germinated, unpolished rice (*Oryza sativa* L.) was found to contain a substantial amount of D-serine, and the ratio of the D-enantiomer to the L-enantiomer was higher for serine than for other amino acids. A serine racemase (E.C.5.1.1.18) was characterized from the source, whose structure was distorted by addition of  $Mg^{2+}$ ; this structural change probably regulates competing racemase and dehydratase activities.



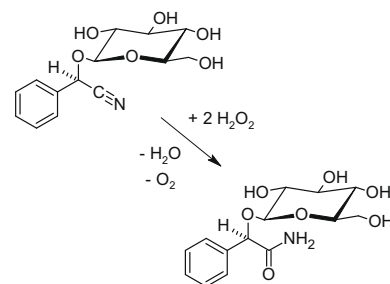
## METABOLISM

## Generation of primary amide glucosides from cyanogenic glucosides

pp 388–393

Jandirk Sendker, Adolf Nahrstedt\*

The conversion of the cyanogenic glucoside prunasin into the corresponding prunasinamide has been observed in the leaves of *Olinia ventosa* and other prunasin-containing species only if reactive oxygen species were produced. *In vitro*, pure prunasin was quickly degraded with  $H_2O_2$  indicating that the Radziszewski reaction is a feasible mechanism for amide generation.



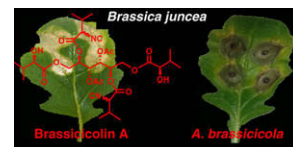
## ECOLOGICAL BIOCHEMISTRY

The phytopathogenic fungus *Alternaria brassicicola*: Phytotoxin production and phytoalexin elicitation

pp 394–402

M. Soledade C. Pedras\*, Paulos B. Chumala, Wei Jin, Mohammed S. Islam, Dominic W. Hauck

*Alternaria brassicicola* produces brassicicolin A as the major host-selective toxin.



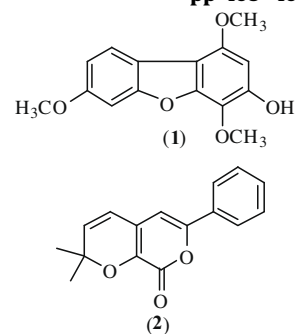
## BIOACTIVE PRODUCTS

Dibenzofuran and pyranone metabolites from *Hypericum revolutum* ssp. *revolutum* and *Hypericum choisianum*

pp 403–406

Winnie Ka Po Shiu, Simon Gibbons\*

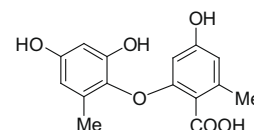
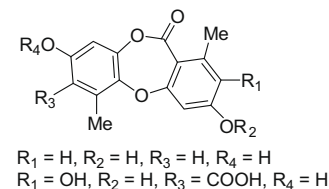
Fractionation of the dichloromethane extract of *Hypericum revolutum* ssp. *revolutum* and the hexane extract of *Hypericum choisianum* led to the isolation of two compounds, 3-hydroxy-1,4,7-trimethoxydibenzofuran (**1**) and 4-(3-O-3"-3"-methylbutenyl-6-phenyl-pyran-2-one (**2**), respectively. The minimum inhibitory concentration (MIC) of (**1**) against a panel of multidrug- and methicillin-resistant *Staphylococcus aureus* strains was 256  $\mu$ g/ml.

Aromatase inhibitory, radical scavenging, and antioxidant activities of depsidones and diaryl ethers from the endophytic fungus *Corynespora cassicola* L36

pp 407–413

Porntep Chomcheon, Suthep Wiyakrutta, Nongluksna Sriubolmas, Nattaya Ngamrojanavanich, Surapong Kengtong, Chulabhorn Mahidol, Somsak Ruchirawat, Prasat Kittakoop\*

Three compounds, corynesidones A, B, and corynether A were isolated from the fungus *Corynespora cassicola*, and they exhibited potent antioxidant activity. Corynesidone A ( $R_1$  to  $R_4$  = H) was an aromatase inhibitor.

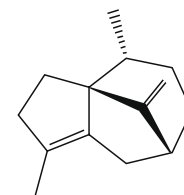


### Norsesquiterpene hydrocarbon, chemical composition and antimicrobial activity of *Rhaponticum carthamoides* root essential oil

pp 414–418

Jaroslav Havlik\*, Milos Budesinsky, Pavel Kloucek, Ladislav Kokoska, Irena Valterova, Sona Vasickova, Vaclav Zeleny

A detailed analysis of *Rhaponticum carthamoides* (Willd.) Iljin root essential oil was carried out, resulting in identification of 30 constituents. Structure of the main component was elucidated as 13-norcypera-1(5),11(12)-diene and is reported for first time. The oil was active against some Gram-positive bacteria and yeast.



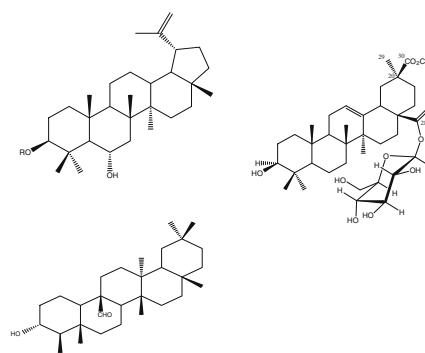
13-norcypera-1(5),11(12)-diene

### Triterpenoids with antimicrobial activity from *Drypetes inaequalis*

pp 419–423

Simon Suh Awanchiri, Hanh Trinh-Van-Dufat, Jovita Chi Shirri, Marlise Diane J. Dongfack, Guy Merlin Nguenang, Sabrina Boutefnouchet, Zacharias T. Fomum, Elisabeth Seguin, Philippe Verite, François Tillequin, Jean Wandji\*

Five antimicrobial triterpenoids belonging to lup-20(29)-ene, olean-12-ene and friedelane type derivatives have been isolated from *Drypetes inaequalis*.



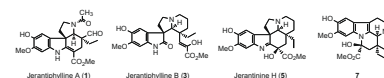
## CHEMISTRY

### Seco-tabersonine alkaloids from *Tabernaemontana corymbosa*

pp 424–429

Kuan-Hon Lim, Noel F. Thomas, Zanariah Abdullah, Toh-Seok Kam\*

Two Seco-tabersonine alkaloids jerantiphyllines A and B, in addition to a tabersonine hydroxyindolenine jerantinine H, and a recently reported vincamine alkaloid **7** were isolated from the leaf extract of the Malayan *Tabernaemontana corymbosa*.

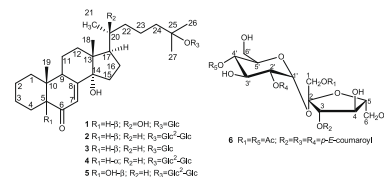


### Ecdysteroids and a sucrose phenylpropanoid ester from *Froelichia floridana*

pp 430–436

Ping Wang, Shiyu Li\*, Stacy Ownby, Zhizhen Zhang, Wei Yuan, Wanli Zhang, R. Scott Beasley

Phytoecdysteroid glycosides **1–5** and a phenylpropanoid ester of sucrose **6** were isolated from *Froelichia floridana*, along with eight known compounds (**7–14**). Compounds **1–2** and **6–14** were tested *in vitro* for their activity against DNA topoisomerase I, but only diosmetin (**13**) exhibited marginal inhibition.



**OTHER CONTENTS****Erratum****p 437****Announcement: The Phytochemical Society of Europe****p I**

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