

Phytochemistry Vol. 68, No. 3, 2007

## Contents

### Editorial

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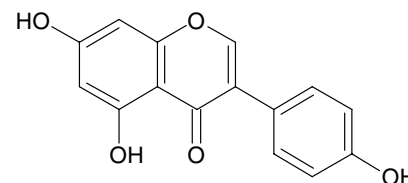
### MOLECULES OF INTEREST

**Does an apple a day keep the doctor away because a phytoestrogen a day keeps the virus at bay? A review of the anti-viral properties of phytoestrogens**

pp 266–274

J.H.J. Martin<sup>\*</sup>, S. Crotty, P. Warren, P.N. Nelson

Genistein, one of several phytoestrogens that demonstrate antiviral activity.



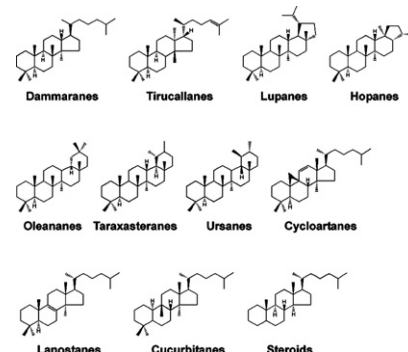
### REVIEW

**Saponins, classification and occurrence in the plant kingdom**

pp 275–297

Jean-Paul Vincken<sup>\*</sup>, Lynn Heng, Aede de Groot, Harry Gruppen

Saponins are classified in 11 main groups, based on the structure of their carbon skeletons. Fragmentation and decoration (i.e. oxidation, glycosylation) of the carbon skeletons are discussed, in relation to their plant origin. The distribution of skeletons in the plant kingdom, and their decoration, does not seem to be order-specific.



### PROTEIN BIOCHEMISTRY

**Purification and characterization of proline/hydroxyproline-rich glycoprotein from pearl millet coleoptiles infected with downy mildew pathogen *Sclerospora graminicola***

pp 298–305

Shantharaj Deepak, Sekhar Shailasree, Neerakkal Sujeeth, Ramachandra K. Kini, Shekar H. Shetty, Axel Mithöfer<sup>\*</sup>

A proline/hydroxyproline-rich glycoprotein that is induced in *Pennisetum glaucum* upon *Sclerospora graminicola* infection was purified from the plants' cell wall and biochemically characterized. Its involvement in oxidative cross-linking processes contributing to plants' defence reactions is supposable.

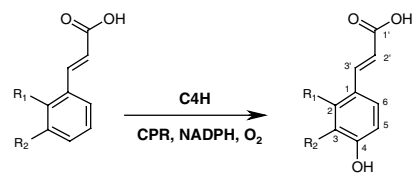


## Non-natural cinnamic acid derivatives as substrates of cinnamate 4-hydroxylase

pp 306–311

Hao Chen, Hanxiao Jiang, John A. Morgan\*

Cinnamate 4-hydroxylase (C4H) from *Arabidopsis thaliana* was used to hydroxylate several substrate analogues.

1. R1=F, Cl, Me, OMe, OEt, NO<sub>2</sub>; R2=H

2. R1= H; R2=OH, F, Me

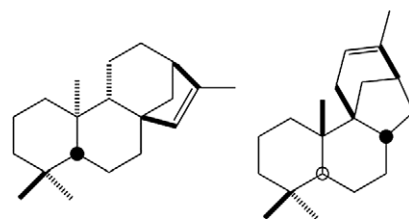
## MOLECULAR GENETICS AND GENOMICS

### Functional characterization of the rice kaurene synthase-like gene family

pp 312–326

Meimei Xu, P. Ross Wilderman, Dana Morrone, Jianjun Xu, Arnab Roy, Marcia Margis-Pinheiro, Narayana M. Upadhyaya, Robert M. Coates, Reuben J. Peters\*

Functional analysis of several rice kaurene synthase-like genes is reported, essentially completing biochemical characterization of the corresponding gene family, which enabled broader analyses of gene evolution and regulation.

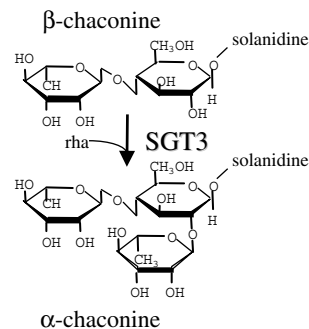


### Potato glycosyltransferase, the terminal step in triose side-chain biosynthesis

pp 327–334

Kent F. McCue\*, Paul V. Allen, Louise V.T. Shepherd, Alison Blake, M. Malendia Maccree, David R. Rockhold, Richard G. Novy, Derek Stewart, Howard V. Davies, William R. Belknap

Antisense downregulation of *Sgt3* in tubers of transgenic potato plants resulted in a significant reduction in  $\alpha$ -solanine and  $\alpha$ -chaconine accumulation with a concomitant accumulation of  $\beta$ -solanine and  $\beta$ -chaconine. Using reverse genetics, SGT3 function is assigned as the  $\beta$ -solanine and  $\beta$ -chaconine rhamnosyl transferase.



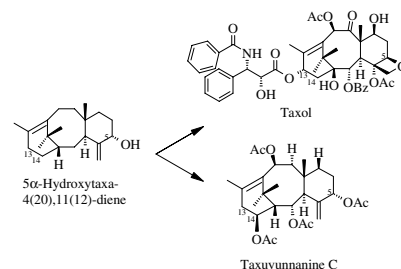
## METABOLISM

### Administering cultured *Taxus* cells with early precursors reveals bifurcations in the taxoid biosynthetic pathway

pp 335–341

Raymond E.B. Ketchum\*, Tohru Horiguchi, Deyou Qiu, Robert M. Williams, Rodney B. Croteau

The order of acylation and hydroxylation of the early precursor 5 $\alpha$ -hydroxytaxa-4(20),11(12)-diene determines the efficiency of conversion to 13 $\alpha$ -hydroxy taxoids (e.g. Taxol) and 14 $\beta$ -hydroxy taxoids (e.g. taxuyunnanine C).

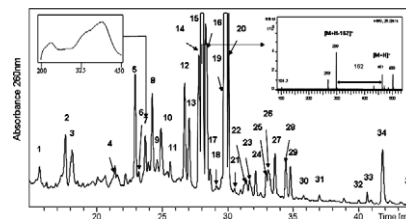


## Metabolic profiling and systematic identification of flavonoids and isoflavonoids in roots and cell suspension cultures of *Medicago truncatula* using HPLC–UV–ESI–MS and GC–MS

pp 342–354

Mohamed A. Farag, David V. Huhman, Zhentian Lei, Lloyd W. Sumner\*

HPLC–UV–ESI–MS/MS and GC/MS were used for metabolic profiling and systematic identification of polyphenols in *Medicago truncatula* root and cell culture revealing significant differences in isoflavonoid composition between these tissues.



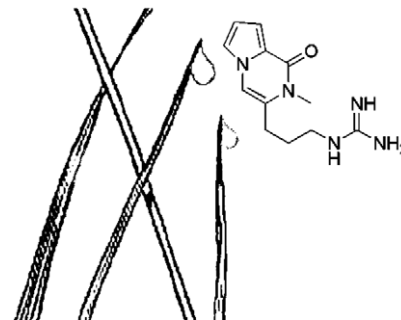
## ECOLOGICAL BIOCHEMISTRY

### Peramine and other fungal alkaloids are exuded in the guttation fluid of endophyte-infected grasses

pp 355–360

Albert Koulman\*, Geoffrey A. Lane, Mike J. Christensen, Karl Fraser, Brian A. Tapper

Peramine was detected by LCMSMS in guttation fluid and cut leaf fluid of grass-endophyte associations. In some associations we also detected loline and ergot peptide alkaloids. This is the first report establishing the mobilization of fungal alkaloids into plant fluids in the grass-endophyte symbiosis.



### Tronchuda cabbage flavonoids uptake by *Pieris brassicae*

pp 361–367

Federico Ferreres, Carla Sousa, Patrícia Valentão, José A. Pereira, Rosa M. Seabra, Paula B. Andrade\*

The flavonoid pattern of larvae of cabbage white butterfly (*Pieris brassicae* L.; Lepidoptera: Pieridae) reared on the leaves of tronchuda cabbage was analysed by HPLC–DAD–MS/MS–ESI. Twenty kaempferol and quercetin derivatives were identified or characterised. The results suggest that *P. brassicae* is able to selectively sequester quercetin derivatives and to metabolize dietary flavonoids.



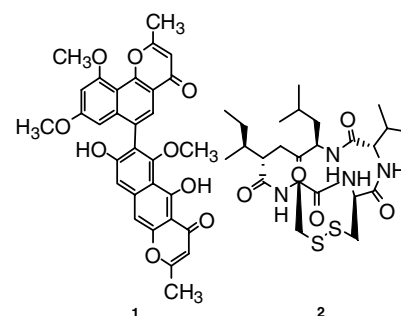
## BIOACTIVE PRODUCTS

### Asperpyrone D and other metabolites of the plant-associated fungal strain *Aspergillus tubingensis*

pp 368–372

Jixun Zhan, G.M. Kamal B. Gunaherath, E.M. Kithsiri Wijeratne, A.A. Leslie Gunatilaka\*

A naphthopyrone, asperpyrone D (1), a strongly cytotoxic cyclic penta-peptide, malformin A<sub>1</sub> (2), funalenone, and nine known naphtho- $\gamma$ -pyrones were isolated from the fungal strain *Aspergillus tubingensis* occurring the rhizosphere of the Sonoran desert plant, *Fallugia paradoxa*.



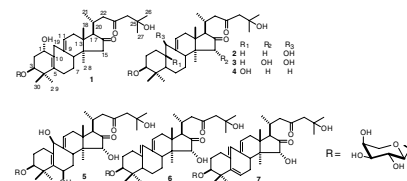
## CHEMISTRY

9,10-*seco*-9,19-Cyclolanostane arabinosides from the roots of *Actaea podocarpa*

pp 373–382

Zulfiqar Ali, Shabana I. Khan, Frank R. Fronczek, Ikhlas A. Khan\*

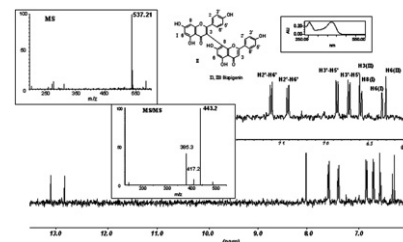
Seven 9,10-*seco*-9,19-cyclolanostane arabinosides, named podocarpasides A–G, were isolated from the roots of *Actaea podocarpa* DC.

Identification of the major constituents of *Hypericum perforatum* by LC/SPE/NMR and/or LC/MS

pp 383–393

Evangelos C. Tatsis, Sjef Boeren, Vassiliki Exarchou, Anastassios N. Troganis, Jacques Vervoort, Ioannis P. Gerothanassis\*

Herewith we report the use of modern hyphenated LC/SPE/NMR and LC/MS techniques in the characterization of constituents of Greek *Hypericum perforatum*, mainly naphthodianthrone, flavonoids and phenolic acids and two phloroglucinols (hyperfirin and adhyperfirin).



## OTHER CONTENTS

## Announcement: The Phytochemical Society of Europe

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\* Corresponding author

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