

Phytochemistry Vol. 67, No. 11, 2006

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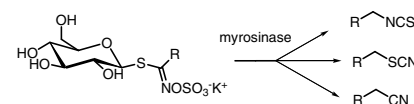
REVIEW

The enzymic and chemically induced decomposition of glucosinolates

pp 1053–1067

Atle M. Bones, John T. Rossiter\*

Enzymic and mechanisms of glucosinolate degradation are reviewed in relation to plant and insects, as well as non-enzymic degradation which is of importance to food processing and human health.



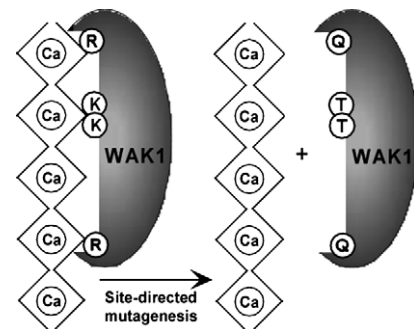
PROTEIN BIOCHEMISTRY

In vitro characterization of the homogalacturonan-binding domain of the wall-associated kinase WAK1 using site-directed mutagenesis

pp 1068–1079

Annabelle Decreux, Annick Thomas, Benoît Spies, Robert Brasseur, Pierre Van Cutsem, Johan Messiaen

The extracellular domain of the wall-associated receptor kinase WAK1 from *Arabidopsis thaliana* was over-expressed, purified and tested for its ability to interact with calcium-associated homogalacturonans. Using receptor binding domain analysis, site-directed mutagenesis and interaction studies, we could identify specific amino acids involved in the binding of WAK1 to homogalacturonans.

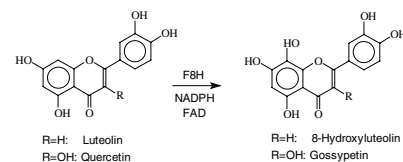


An NADPH and FAD dependent enzyme catalyzes hydroxylation of flavonoids in position 8

pp 1080–1087

Heidrun Halbwirth, Karl Stich\*

A flavonoid 8-hydroxylase was demonstrated for the first time with enzyme preparations of *Chrysanthemum segetum*. The enzyme is localized in the microsomal fraction and uses NADPH and FAD as cofactors. The flavonoid 8-hydroxylase seems to represent a type of hydroxylating enzyme in the flavonoid pathway.



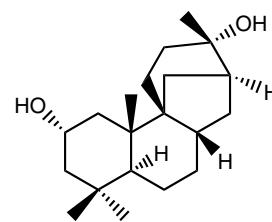
## METABOLISM

### Bioconversion of *Stemodia maritima* diterpenes and derivatives by *Cunninghamella echinulata* var. *elegans* and *Phanerochaete chrysosporium*

pp 1088–1093

Andrew S. Lamm, William F. Reynolds, Paul B. Reese\*

*Stemodia maritima* diterpenes and their synthetic analogues were transformed by the fungi *Cunninghamella echinulata* var. *elegans* and *Phanerochaete chrysosporium* to give 13 products.

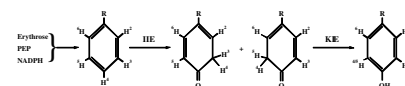


### The prediction of isotopic patterns in phenylpropanoids from their precursors and the mechanism of the NIH-shift: Basis of the isotopic characteristics of natural aromatic compounds

pp 1094–1103

Hanns-Ludwig Schmidt\*, Roland A. Werner, Wolfgang Eisenreich, Claudio Fuganti, Giovanni Fronza, Gérald Remaud, Richard J. Robins

The deuterium patterns (the relative abundances of isotopomers) of natural aromatic compounds are determined by that of their precursors in the shikimic acid pathway – erythrose, PEP and NADPH – and by intramolecular (IIE) and kinetic (KIE) isotope effects accompanying the NIH-shift during hydroxylation by monooxygenases.

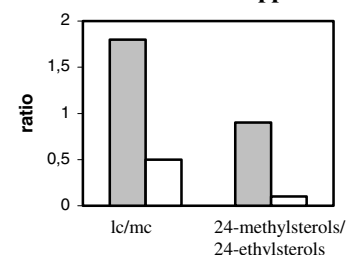


### Changes in lipid composition of *Blumeria graminis* f.sp. *tritici* conidia produced on wheat leaves treated with heptanoyl salicylic acid

pp 1104–1109

Jérôme Muchembled, Anissa Lounès-Hadj Sahraoui\*, Anne Grandmougin-Ferjani, Michel Sancholle

It was shown for the first time that activation of plant defence reactions with heptanoyl salicylic acid (HS) could affect the qualitative and quantitative total lipid (sterol and fatty acid) composition of *Bgt* conidia. The long chain/medium chain FA ratio decreased from 1.8 in the conidia produced on untreated leaves to 0.5 in the conidia obtained from HS treated leaves. The 24-methylsterols/24-ethylsterols ratio was reduced by ninefold in the conidia obtained from treated leaves.



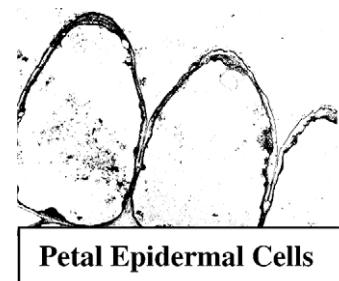
Long chain/medium chain FA ratio (lc/mc) and the 24-methylsterols/24-ethylsterols ratio obtained in *Bgt* conidia produced from untreated (control : grey) and treated (white) wheat leaves with HS 0.1 g l<sup>-1</sup>.

### Location and biosynthesis of monoterpenyl fatty acyl esters in rose petals

pp 1110–1119

Patrick J. Dunphy\*

The upper epidermal cell layer and epicuticular wax surface of Lady Seton rose petals are sites of biosynthesis and accumulation, respectively, of terpenyl fatty acyl esters based mainly on the monoterpene alcohol geraniol coupled primarily to fatty acids of carbon numbers 16–20. The esters account for 14–64% of the total monoterpenes present in the petal. The biosynthesis of the monoterpene component of the fatty acyl ester occurs via the mevalonic acid pathway in Lady Seton as well as in the hybrid tea rose Fragrant Cloud. In the latter flower the biosynthesis of geraniol was biosynthetically *trans* as was the formation of nerol and citronellol. Both geraniol and nerol were shown to be precursors of citronellol via an NADPH dependent reductase reaction.



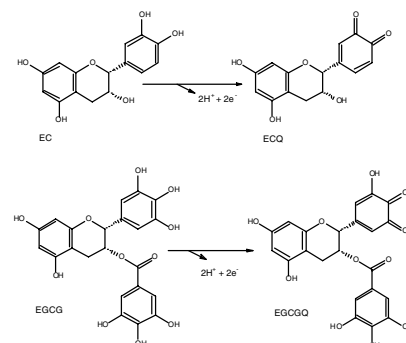
## ECOLOGICAL BIOCHEMISTRY

### Enhanced oxidation of flavan-3-ols and proanthocyanidin accumulation in water-stressed tea plants

pp 1120–1126

Iker Hernández, Leonor Alegre, Sergi Munné-Bosch\*

In this study, it is reported for the first time on the in vivo oxidation of EC and EGCG to their respective quinones in water-stressed tea plants.



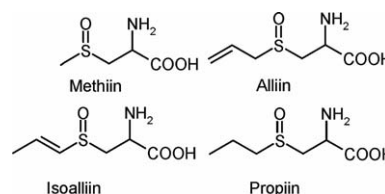
## CHEMOTAXONOMY

### Occurrence and taxonomic significance of cysteine sulfoxides in the genus *Allium* L. (Alliaceae)

pp 1127–1135

Reinhard M. Fritsch\*, Michael Keusgen

The content of the cysteine sulfoxides methiin, alliin, isoalliin, and propiin was studied in 72 *Allium* species, subspecies, cultivars, and land-races, three *Tulbaghia* species, *Triteleia laxa*, and the Brassicaceae *Alliaria petiolata*.



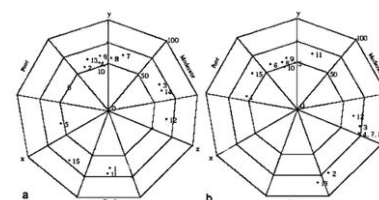
## BIOACTIVE PRODUCTS

### Metabolite profiling and characterization of somaclonal variants in tea (*Camellia* spp.) for identifying productive and quality accession

pp 1136–1142

Jibu Thomas, R. Raj Kumar, A.K.A. Mandal\*

Somaclonal variants showed distinct variation in terms of photosynthetic carbon assimilation, stomatal conductance and diffusion resistance. Class interval analysis based on physiological parameters grouped these plants into three clusters. Green leaf constituents and quality profile of made tea produced exhibited wide variation. Three variants grouped under good category of productivity index. Center point radar graph analysis of quality constituents grouped these plants into three clusters.

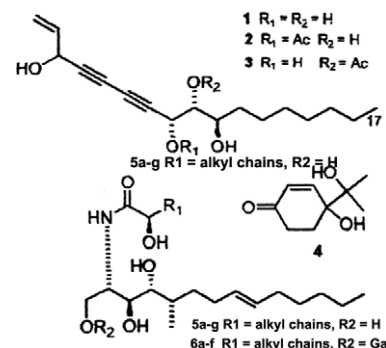


### Immunosuppressive diacetylenes, ceramides and cerebroside from *Hydrocotyle leucocephala*

pp 1143–1150

Freddy Ramos, Yoshihisa Takaishi\*, Kazuyoshi Kawazoe, Coralía Osorio, Carmenza Duque, Ricardo Acuña, Yoshinori Fujimoto, Mitsunobu Sato, Masato Okamoto, Tetsuya Oshikawa, Sharif Uddin Ahmed

Three C-17 diacetylenic compounds (1–3), one monoterpenoid (4), seven ceramides (5a–g), seven cerebroside (6a–f) and nine known compounds were isolated from the methanolic extract of *Hydrocotyle leucocephala*. The isolated compounds were active in the LPS induced cytokine production assay for IL-10, IL-12, and TNF-α.

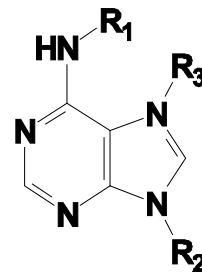


**CHEMISTRY****Efficiency of different methods of extraction and purification of cytokinins**

pp 1151–1159

Klára Hoyerová, Alena Gaudinová, Jiří Malbeck, Petre I. Dobrev,  
Tomáš Kocábek, Blanka Šolcová, Alena Trávníčková, Miroslav Kamínek\*

Extraction of cytokinins with modified Bileski's solvent and their purification using mixed-mode-SPE was found effective in the reduction of non-cytokinin UV-absorbing compounds providing preparations exhibiting high responses of deuterated counterparts of natural cytokinins when analyzed by liquid chromatography-mass spectrometry.

**OTHER CONTENTS****Book review**

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