

Phytochemistry Vol. 67, No. 20, 2006

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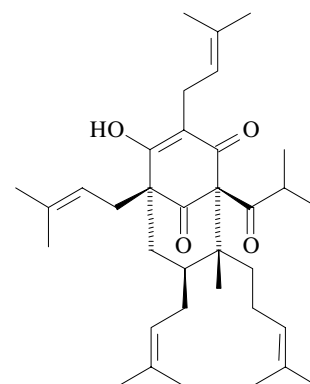
MOLECULES OF INTEREST

Hyperforin

pp 2201–2207

Ludger Beerhues*

A brief survey of chemistry, biochemistry, and pharmacology of hyperforin.



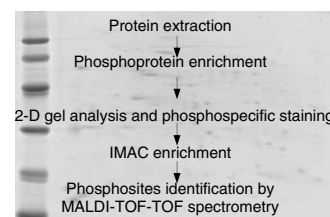
PROTEIN BIOCHEMISTRY

Phosphoproteins analysis in plants: A proteomic approach

pp 2208–2214

Sabrina Laugesen, Elsa Messinese, Sonia Hem, Carole Pichereaux, Sabine Grat, Raoul Ranjeva, Michel Rossignol, Jean-Jacques Bono*

An integrated procedure to analyse phosphoproteins in plants is proposed. The combination of two enrichment stages, sequentially at the protein and at the peptide levels allowed to identify phosphoproteins and their phosphorylation sites in samples prepared from cell suspension cultures of *Arabidopsis thaliana* or roots from *Medicago truncatula*.



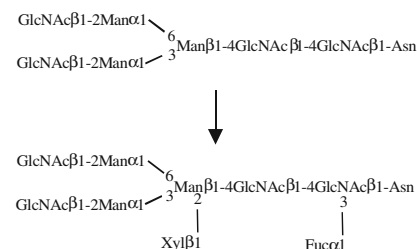
MOLECULAR GENETICS AND GENOMICS

Molecular cloning and heterologous expression of β 1,2-xylosyltransferase and core α 1,3-fucosyltransferase from maize

pp 2215–2224

Jayakumar Singh Bondili, Alexandra Castilho, Lukas Mach, Josef Glössl, Herta Steinkellner, Friedrich Altmann, Richard Strasser*

A xylosyltransferase (XylT) and a fucosyltransferase (FucT) capable of synthesizing β 1,2-xylose or core α 1,3-fucose residues on plant complex *N*-glycans, respectively, have been identified from maize. Heterologously expressed forms of the two enzymes led to the formation of the corresponding *N*-glycan epitopes on a mammalian glycoprotein.



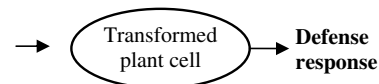
The *rolC* gene induces expression of a pathogenesis-related β -1,3-glucanase in transformed ginseng cells

pp 2225–2231

Konstantin V. Kiselev, Mikhail I. Kusaykin, Alexandra S. Dubrovina, Denis A. Bezverbny, Tatiana N. Zvyagintseva, Victor P. Bulgakov*

In ginseng cells, the *rolC* gene activates expression of β -1,3-glucanase, indicating that *Agrobacterium rhizogenes* has a potential to activate plant defense.

Agrobacterium rhizogenes
(*rolC* gene)



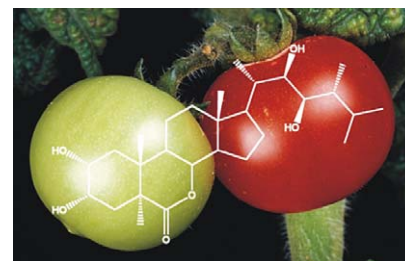
METABOLISM

Metabolic changes in fruits of the tomato *d^x* mutant

pp 2232–2238

Janina Lisso, Thomas Altmann, Carsten Müssig*

Brassinosteroids are essential for growth of most plant organs. However, little is known about their role in metabolic processes. We show that brassinosteroids in shoots are essential for sugar accumulation in tomato fruits, and show further brassinosteroid-dependent metabolic changes in fruits of the brassinosteroid-deficient *d^x* mutant.

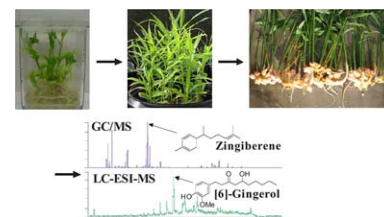


Metabolic profiling of in vitro micropropagated and conventionally greenhouse grown ginger (*Zingiber officinale*)

pp 2239–2255

Xiaoqiang Ma, David R. Gang*

A highly efficient, economical, and safe in vitro micropropagation procedure for ginger (*Zingiber officinale*) was developed. GC/MS- and LC-ESI-MS-based metabolic profiles of in vitro micropropagation derived and greenhouse grown ginger plants demonstrated that this procedure had no significant impact on chemical composition of the resulting plants.

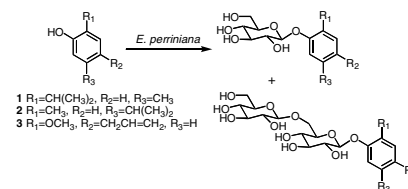


Biotransformation of thymol, carvacrol, and eugenol by cultured cells of *Eucalyptus perriniana*

pp 2256–2261

Kei Shimoda, Yoko Kondo, Tomohisa Nishida, Hatsuyuki Hamada, Nobuyoshi Nakajima, Hiroki Hamada*

Biotransformation products, 5-methyl-2-(1-methylethyl)phenyl 6-*O*-(β -D-glucopyranosyl)- β -D-glucopyranoside and 2-methyl-5-(1-methylethyl)phenyl 6-*O*-(β -D-glucopyranosyl)- β -D-glucopyranoside, together with 2-methoxy-4-(2-propenyl)phenyl 6-*O*-(β -D-glucopyranosyl)- β -D-glucopyranoside and the corresponding mono- β -glucosides were isolated from the cultured cells of *Eucalyptus perriniana* following administration of thymol (1), carvacrol (2), and eugenol (3).



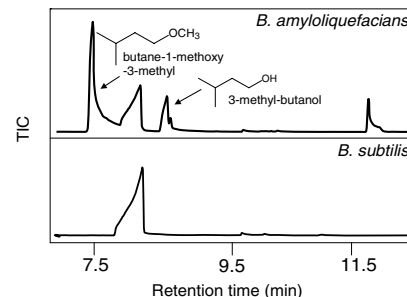
ECOLOGICAL BIOCHEMISTRY

GC–MS SPME profiling of rhizobacterial volatiles reveals prospective inducers of growth promotion and induced systemic resistance in plants

pp 2262–2268

Mohamed A. Farag*, Choong-Min Ryu, Lloyd W. Sumner, Paul W. Paré

SPME utilized for profiling of volatiles in *Bacillus subtilis* (GB03) and *B. amyliquefaciens* (IN937a) revealed significant differences in volatile composition among both strains, most notably in 3-methyl-butanol levels when inoculated on MS media or potato roots.



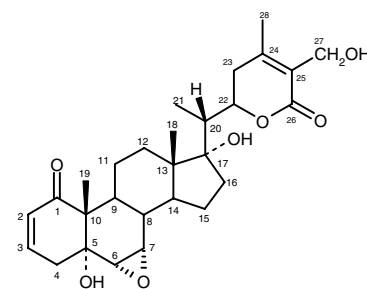
CHEMOTAXONOMY

Phytochemical and genetic analysis in selected chemotypes of *Withania somnifera*

pp 2269–2276

Rekha S. Dhar, Vijeshwar Verma*, Krishan A. Suri, Rajinder S. Sangwan, Naresh K. Satti, Arun Kumar, Rakesh Tuli, Gulam N. Qazi

Presence of active constituents (withanolides and withaferin A) from roots and leaves of *Withania somnifera* were analyzed by HPLC. The isolated compounds were elucidated on the basis of IR, NMR and mass spectral data. Genetic analysis was carried out employing AFLP. Positive correlation of main components was obtained with the DNA markers employing Jaccard's similarity coefficient. The present investigation throws a fresh perspective of using AFLP markers to designate specific chemotypes for breeding and therapeutic studies.



27-hydroxywithanone

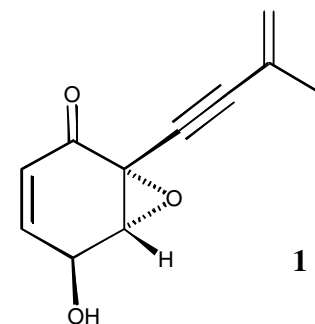
BIOACTIVE PRODUCTS

An antifungal and plant growth promoting metabolite from a sterile dark ectotrophic fungus

pp 2277–2280

Hyun-Ju Kim, Francesco Vinale, Emilio L. Ghisalberti*, Carol M. Worth, Krishnapillai Sivasithamparam, Brian W. Skelton, Allan H. White

A metabolite produced in cultures of a sterile dark ectotrophic fungus was shown to have structure **1** by spectroscopic and X-ray diffraction studies. The metabolite shows antifungal and plant growth promoting activity.



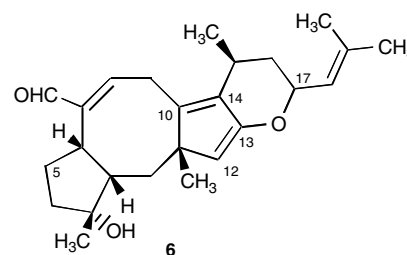
1

Ophiobolin E and 8-*epi*-ophiobolin J produced by *Drechslera gigantea*, a potential mycoherbicide of weedy grasses

pp 2281–2287

Antonio Evidente*, Anna Andolfi, Alessio Cimmino, Maurizio Vurro, Mariano Fracchiolla, Raghavan Charudattan, Andrea Motta

We report the structure of two ophiobolins, named ophiobolins E (**6**) and 8-*epi*-ophiobolin J, produced by *Drechslera gigantea*, grown on liquid and solid culture, together to the well known ophiobolin B and J, phytotoxins with potential herbicidal activity.



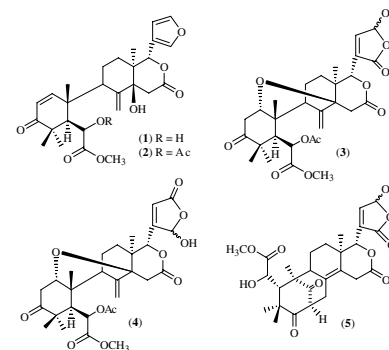
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Antimalarial tetranortriterpenoids from the seeds of *Lansium domesticum* Corr.

pp 2288–2293

Nisakorn Saewan^{*}, John D. Sutherland, Kan Chantrapromma^{*}

Domesticulide A–E (**1–5**) together with 11 known compounds (**6–16**) were isolated from the seeds of *Lansium domesticum* Corr. Compounds **2**, **3**, **4**, **7**, **8**, **10**, **11**, and **15** showed antimalarial activity against *Plasmodium falciparum* with IC₅₀'s of 2.4–9.7 µg/ml.



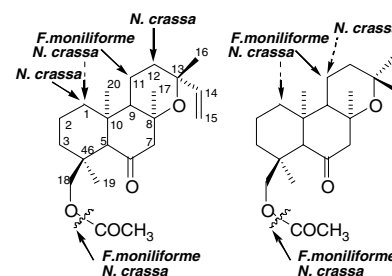
CHEMISTRY

Biotransformations of *ent*-18-acetoxy-6-ketomanoyl oxides epimers at C-13 with filamentous fungi

pp 2294–2302

Hanae Ghoumari, Mohamed-Hassan Benajiba, Andrés García-Granados, Antonia Fernández, Antonio Martínez^{*}, Francisco Rivas, José M. Arias

The biotransformation of *ent*-18-acetoxy-6-ketomanoyl oxides, epimers at C-13, with *Fusarium moniliforme* and *Neurospora crassa*, are described. The main biohydroxylation have been introduced in both epimers at C-1 (*ent*-β) or C-11 (*ent*-α). In addition, with the 13-*epi* substrate *N. crassa* originated other minor hydroxylations by the *ent*-α face at C-1 or at C-12, whereas *ent*-11β-hydroxy or 11-oxo derivatives were achieved with the 13-*normal* substrate.



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