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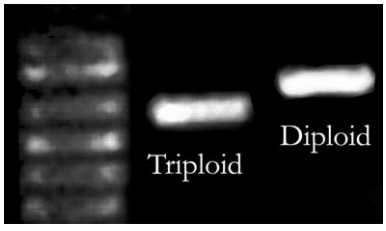
FULL PAPERS

MOLECULAR GENETICS AND GENOMICS

Identification of an EcoRI restriction site for a rapid and precise determination of β-asarone-free *Acorus calamus* cytotypes pp 507–514

Cinzia M. Bertea, Chiara M.M. Azzolin, Simone Bossi, Giovanni Doglia, Massimo E. Maffei*

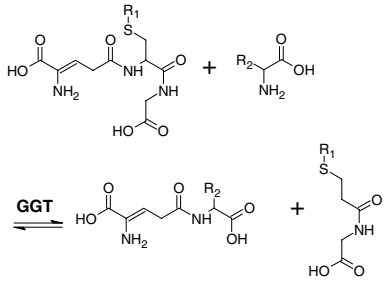
The aim of this work was to identify a diploid β-asarone-free *Acorus calamus* by using chemical and molecular approaches. *A. calamus* was analyzed by gas chromatography–mass spectrometry (GC–MS) and comparison of the 700 bp sequence of a 5S-rRNA gene spacer region was performed. By aligning the isolated nucleotide sequences of varieties of *A. calamus* chemotypes present in Genbank, sequence diversities were found in the spacer region. The PCR products were digested by using EcoRI. The restriction profile of the spacer domain resulted different for the two cytotypes.



Purification and cloning of a γ-glutamyl transpeptidase from onion (*Allium cepa*) pp 515–522

Martin L. Shaw, Meeghan D. Pither-Joyce, John A. McCallum*

Onion γ-glutamyl transpeptidase catalyses hydrolysis of γ-glutamyl linkages in γ-glutamyl peptides and transfer of the γ-glutamyl group to amino acids and peptides and has high affinity for glutathione and glutathione conjugates.

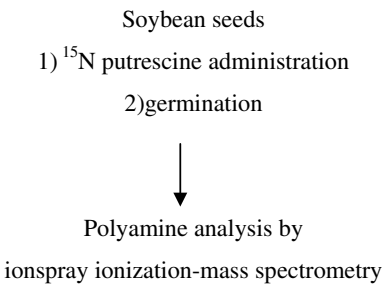


METABOLISM

Analysis of polyamine metabolism in soybean seedlings using ^{15}N-labelled putrescine pp 523–528

Masato Ohe*, Masaki Kobayashi, Masaru Niitsu, Nello Bagni, Shigeru Matsuzaki

Translocation and metabolism during soybean germination using 15N-labelled putrescine is reported.

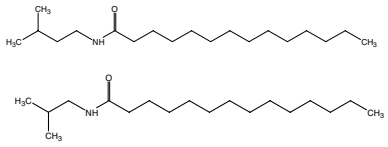


ECOLOGICAL BIOCHEMISTRY

Mass spectral characterization of fatty acid amides from alfalfa trichomes and their deterrence against the potato leafhopper pp 529–541

Christopher M. Ranger*, Rudolph E.K. Winter, George E. Rottinghaus, Elaine A. Backus, David W. Johnson

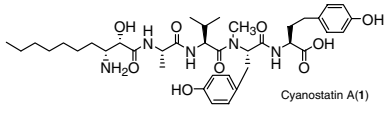
N-(3-methylbutyl)amides and *N*-(2-methylpropyl)amides of C_{14} through C_{18} fatty acids were identified from glandular trichomes of the alfalfa genotype *Medicago sativa* G98A, and synthetic representatives of the amides were tested for bioactivity against the potato leafhopper, *Empoasca fabae*.



Leucine aminopeptidase M inhibitors, cyanostatin A and B, isolated from cyanobacterial water blooms in Scotland pp 543–548

Tomoharu Sano*, Hiroo Takagi, Louise F. Morrison, James S. Metcalf, Geoffrey A. Codd, Kunimitsu Kaya

Two leucine aminopeptidase M inhibitors, cyanostatin A and B, were isolated from water blooms of Loch Rescobie in Scotland. These inhibitors were lipopeptides contained 3-amino-2-hydroxydecanoic acids. Cyanostatin A and B strongly inhibited the activity of leucine aminopeptidase M at IC_{50} values of 40 and 12ng/ml, respectively.

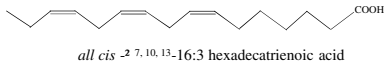


CHEMOTAXONOMY

Chemotaxonomy of the Rubiaceae family based on leaf fatty acid composition pp 549–559

Sébastien Mongrand*, Alain Badoc, Brigitte Patouille, Chantal Lacomblez, Marie Chavent, Jean-Jacques Bessoule

107 Rubiaceae leaves were analyzed for their fatty acid composition. One of the most interesting variables was *all cis*-Δ7,10,13-16:3 hexadecatrienoic acid. With the exception of Rubieae, Theligoneae, and some Anthospermeae which are typically 16:3-plants, other Rubiaceae appeared to be C18:3 plants.

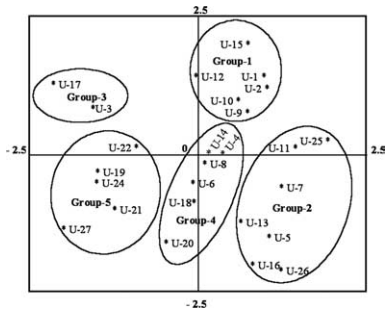


all cis -2 7, 10, 13-16:3 hexadecatrienoic acid

Genetic diversity of UPASI tea clones (*Camellia sinensis* (L.) O. Kuntze) on the basis of total catechins and their fractions pp 561–565

M. Saravanan, K.M. Maria John, R. Raj Kumar*, P.K. Pius, R. Sasikumar

Group 1 was a mixture of ''Assam'' and ''China'' cultivars, including medium quality and drought tolerant clones. Group 2 contained purely ''China'' cultivars, while group 3 possessed high quality tea cultivars. Group 4 contained both ''Assam'' and ''China'' cultivars, while group 5 comprised only ''Assam'' cultivars.

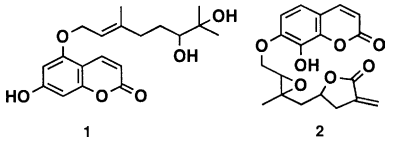


BIOACTIVE PRODUCTS

Chemical constituents of *Murraya siamensis*: three coumarins and their anti-tumor promoting effect pp 567–572

Chihiro Ito, Masataka Itoigawa*, Saori Onoda, Atsuko Hosokawa, Nijsiri Ruangrungsi, Toshimitsu Okuda, Harukuni Tokuda, Hoyoku Nishino, Hiroshi Furukawa

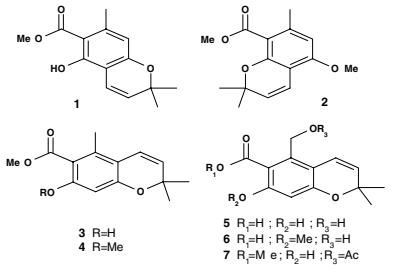
Three coumarins, named murrayacoumarins A (**1**), B (**2**), and C, were isolated from the leaves of *Murraya siamensis* as inhibitors of Epstein–Barr virus early antigen activation induced by 12-*O*-tetradecanoylphorbol-13-acetate in Raji cells, along with eight known compounds. Their structures were elucidated on the basis of spectroscopic analyses.



Chromenes of polyketide origin from *Peperomia villipetiola* pp 573–579

Karina J. Malquichagua Salazar, Guillermo E. Delgado Paredes, Luis Ripalda Lluncor, Maria Claudia Max Young, Massuo Jorge Kato*

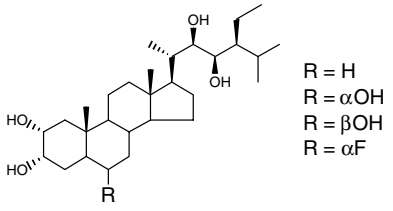
The extracts of leaves and stems of *Peperomia villipetiola* have been found to contain myristicin and seven chromenes (**1**–**7**) of orsellinic acid-type. The anti-fungal activities of the chromenes measured by bioautography against *Cladosporium cladosporioides* and *Cladosporium sphaerospermum* indicated compounds **6** and **7** as the most active.



Synthesis and bioactivity of C-29 brassinosteroid analogues with different functional groups at C-6 pp 581–587

Javier A. Ramírez, Carme Brosa, Lydia R. Galagovsky*

The synthesis and bioactivity of four synthetic analogues of 28-homobrassinosteroids bearing different functional groups at C-6 is described.

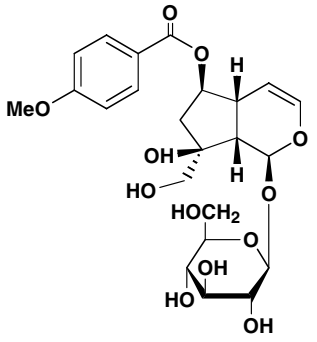


CHEMISTRY

Further constituents from the bark of *Tabebuia impetiginosa* pp 589–597

Tsutomu Warashina*, Yoshimi Nagatani, Tadataka Noro

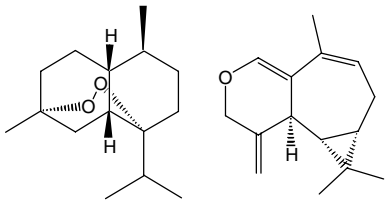
The polar fraction of the MeOH extract of the bark of *Tabebuia impetiginosa* afforded twelve compounds, consisting of four iridoid glycosides, one phenylethanoid glycoside, five phenolic gylcosides, and one lignan glycoside. The structures of these compounds were determined using both spectroscopic and chemical methods.



Sesquiterpene constituents from the essential oil of the liverwort *Plagiochila asplenioides* **pp 599–609**

Adewale Martins Adio*, Wilfried A. König

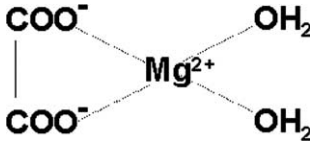
From the liverwort *Plagiochila asplenioides*, seven sesquiterpenes were isolated and their structures determined by NMR, mass spectrometry and chemical correlations in conjunction with enantioselective gas chromatography.



Evidence of formation of glushinskite as a biomineral in a Cactaceae species **pp 611–614**

Paula V. Monje, Enrique J. Baran*

The formation of glushinskite in the Cactaceae species *Opuntia ellisiana* constitutes the first evidence of the presence of this biomineral in a plant.



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* Corresponding author

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