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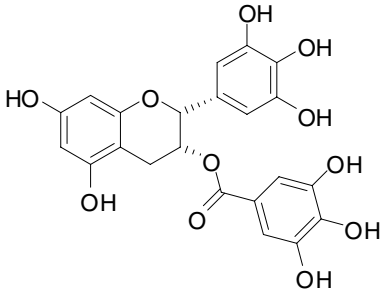
Contents

MOLECULES OF INTEREST

Epigallocatechin-3-gallate (EGCG): Chemical and biomedical perspectives pp 1849–1855

Dale G. Nagle*, Daneel Ferreira, Yu-Dong Zhou

The polyphenolic compound (−)-epigallocatechin-3-gallate (EGCG) is the major catechin found in green tea and is thought to impart many of the health benefits attributed to this beverage. The latest clinical studies have supported some of the potential health benefits of consuming green tea and EGCG. The results from significant clinical studies and the most recent work in the area of stereoselective EGCG synthesis are described.

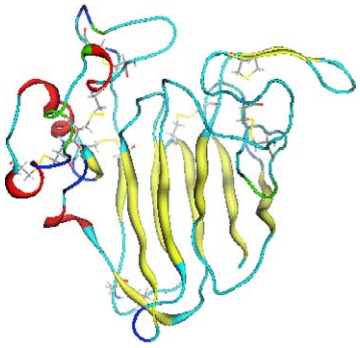


PROTEIN BIOCHEMISTRY

cDNA sequences, MALDI-TOF analyses, and molecular modelling of barley PR-5 proteins pp 1856–1864

Ernst Reiss*, Bernhard Schlesier, Wolfgang Brandt

The family of barley PR-5 proteins (TLPs, TLP for thaumatin-like proteins) was characterised using cDNA analyses, MALDI-TOF analyses, and molecular modelling.



Purification, characterization and cloning of antiviral/ribosome inactivating protein from *Amaranthus tricolor* leaves pp 1865–1873

Sribash Roy, P. Sadhana, Mehbuba Begum, Sushil Kumar, M.L. Lodha, H.C. Kapoor*

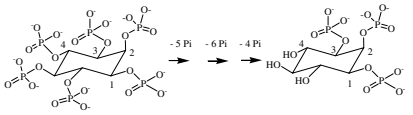
An antiviral, highly basic, glycoprotein of Mr 27 kDa, imparting high level of resistance against sunnhemp rosette virus (SRV) was purified from the dry leaves of *Amaranthus tricolor*. It was characterized in terms of its *N*-glycosidase and RNase activities and N-terminal sequencing. A full-length cDNA clone encoding this protein (AAP1) was also isolated and characterized.

MOLECULAR GENETICS AND GENOMICS

Lily pollen alkaline phytase is a histidine phosphatase similar to mammalian multiple inositol polyphosphate phosphatase (MINPP) pp 1874–1886

Bakul Dhagat Mehta, Sonali P. Jog, Steven C. Johnson, Pushpalatha P.N. Murthy*

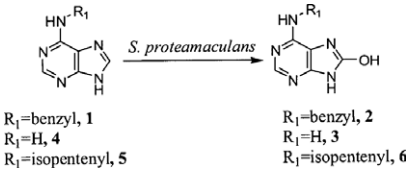
An alkaline phytase with unique catalytic properties was cloned and characterized from lily pollen. The enzyme is a histidine phytase with low similarity (less than 25%) to any known phosphatase or phytase.



Biotransformation of adenine and cytokinins by the rhizobacterium *Serratia proteamaculans* pp 1887–1894

Janet L. Taylor*, L. Irina Zaharia, Hao Chen, Erica Anderson, Suzanne R. Abrams

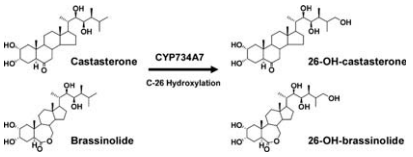
The xanthine dehydrogenase of *Serratia proteamaculans* catalyzed the C8-oxidation of adenine, N^6-benzyladenine and N^6-(isopentenyl)adenine. The two genes encoding the enzyme were cloned and found to be most similar (60% and 72%) to those of *Pseudomonas aeruginosa*.



Tomato cytochrome P450 CYP734A7 functions in brassinosteroid catabolism pp 1895–1906

Toshiyuki Ohnishi, Takahito Nomura, Bunta Watanabe, Daisaku Ohta, Takao Yokota, Hisashi Miyagawa, Kanzo Sakata, Masaharu Mizutani*

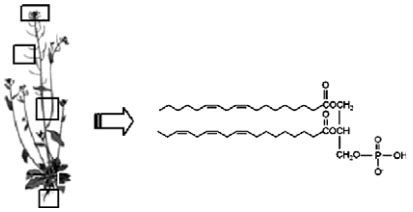
The CYP734A family in cytochrome P450 superfamily from *Lycopersicon esculentum* was characterized. The *35S:CYP374A7* tobacco plants showed a dwarfed phenotype and reduced levels of endogenous brassinosteroids. Functional expression in insect cells confirmed that CYP734A7 is a C-26 hydroxylase of brassinosteroids. The CYP734A family commonly functions in brassinosteroid catabolism in plants.



Quantitative profiling of polar glycerolipid species from organs of wild-type Arabidopsis and a *PHOSPHOLIPASE Dα1* knockout mutant pp 1907–1924

Shivakumar Pattada Devaiah, Mary R. Roth, Ethan Baughman, Maoyin Li, Pamela Tamura, Richard Jeannotte, Ruth Welti, Xuemin Wang*

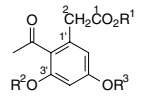
One hundred and forty molecular species of polar glycerolipids in Arabidopsis organs have been quantitatively profiled and the effect of phospholipase Dα1, the most abundant PLD, on glycerolipid composition has been analyzed.

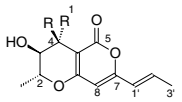


METABOLISM

Production of phenylacetic acid derivatives and 4-epiradicinol in culture by *Curvularia lunata* **pp 1925–1930**

Gouri B. Varma, Majekodunmi O. Fatope*, Ruchi G. Marwah, Mike E. Deadman, Fathiya K. Al-Rawahi





1 $R^1 = CH_3$, $R^2 = R^3 = H$
2 $R^1 = R^2 = R^3 = H$
3 $R^1 = R^2 = CH_3$, $R^3 = H$
4 $R^1 = CH_2CH_3$, $R^2 = R^3 = H$

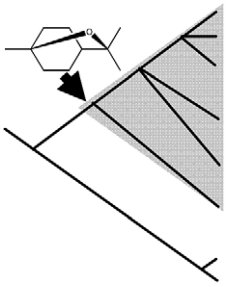
5 $R^1 = H$, R = OH
6 $R^1 = OH$, R = H

Phenylacetic acid derivatives **1**, **3**, **4** and epiradicinol (**5**) have been isolated from the culture mycelia of *Curvularia lunata* grown on YMG, a medium consisting of yeast, glucose and malt extract. Compounds **1**, **3** and **4** lack antimicrobial and antioxidant properties but **5** is significantly antibacterial. The absolute configuration of the diol in **5** was determined by acetonide derivative methodology.

ECOLOGICAL BIOCHEMISTRY

Phylogenetic fragrance patterns in *Nicotiana* sections *Alatae* and *Suaveolentes* **pp 1931–1942**

Robert A. Raguso*, Boris O. Schlumpberger, Rainee L. Kaczorowski, Timothy P. Holtsford

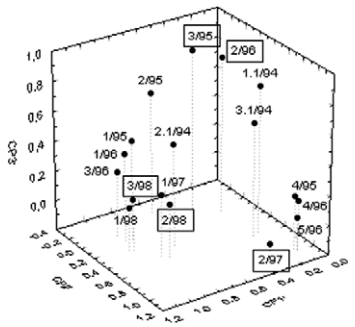


Nocturnal emission of 1,8 cineole and related monoterpenoids from flowers is a synapomorphy for all species of *Nicotiana* sect. *Alatae*, regardless of floral form or pollination strategy.

CHEMOTAXONOMY

Chemotaxonomy of Portuguese *Ulex*: Quinolizidine alkaloids as taxonomical markers **pp 1943–1949**

Patrícia Máximo, Ana Lourenço*, Andreas Tei, Michael Wink

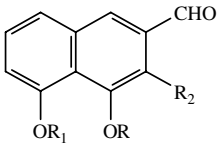


Six species of *Ulex* L. in a total of nineteen populations were investigated as to their content in quinolizidine alkaloids. Seventeen known alkaloids were detected by GC–EIMS and quantification of the seven more abundants alkaloids in all populations was done by GC. Principal component analysis of these data allowed the definition of chemotypes for five of the species and the recognition of hybrids. *N*-Methylcytisine, cytisine, and jussiaeiines A, C and D are recognized as markers of this genus in Portugal.

BIOACTIVE PRODUCTS

Antiprotozoal and cytotoxic naphthalene derivatives from *Diospyros assimilis* **pp 1950–1956**

S. Ganapaty*, P. Steve Thomas, Gloria Karagianis, Peter G. Waterman, Reto Brun



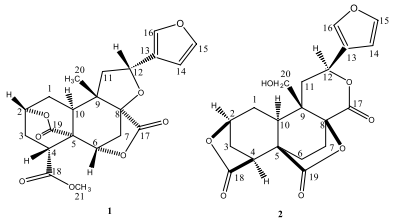
R_1=Me., R_2=OMe., R=H., (**1**)
R_2=R=H., R_1=Me., (**2**)

Chemical investigation of the roots of *Diospyros assimilis* had led to the isolation and characterization of six naphthalene derivatives: two 2-naphthaldehyes, namely, 4-hydroxy-3,5-dimethoxy-2-naphthaldehyde **1**, 4-hydroxy-5-methoxy-2-naphthaldehye **2**, its related isomer 5-hydroxy-4-methoxy-2-naphthaldehyde **3** and three commonly occurring naphthoquinones **4–6**. In addition, the antiprotozoal and cytotoxic activities of the naphthalene derivatives were evaluated using in vitro methods.

Bafoudiosbulbins A, and B, two anti-salmonellal clerodane diterpenoids from *Dioscorea bulbifera* L. var *sativa* **pp 1957–1963**

Rémy Bertrand Teponno, Azefack Léon Tapondjou*, Donatien Gatsing, Jules Désiré Djoukeng, Eliane Abou-Mansour, Raphael Tabacchi, Pierre Tane, H. Stoekli-Evans, David Lontsi

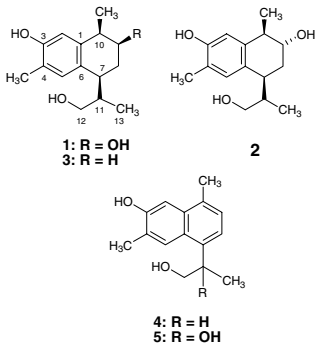
Two clerodane diterpenoids, Bafoudiosbulbins A **1**, and B **2**, together with five known compounds: tetracosanoic acid, 1-(tetracosanoyl)-glycerol, *trans*-tetracosanylferulate, β-sitosterol and 3-*O*-β-D-glucopyranosyl-β-sitosterol were isolated from the tubers of *Dioscorea bulbifera* L. var *sativa*. Their structures were established by high-field NMR techniques (^1H–^1H COSY, DEPT, HMQC, HMBC, NOESY) and in case of **1** was confirmed by X-ray analysis. The anti-bacterial activity of the CH_2Cl_2-extract and the two clerodanes was evaluated.



Cadinane sesquiterpenoids of *Phomopsis cassiae*, an endophytic fungus associated with *Cassia spectabilis* (Leguminosae) **pp 1964–1969**

Geraldo Humberto Silva, Helder Lopes Teles, Lisinéia Maria Zanardi, Maria Claudia Marx Young, Marcos Nogueira Eberlin, Renato Hadad, Ludwig H. Pfenning, Claudio Miguel Costa-Neto, Ian Castro-Gamboa, Vanderlan da Silva Bolzani, Ângela Regina Araújo*

Five cadinane sesquiterpenes derivatives (**1**–**5**) were isolated by bioassay-guided fractionation from *Phomopis cassiae*, an endophytic fungus associated with *Cassia spectabilis*. The structures of the sesquiterpenes were established on the basis of analyses of 1D and 2D NMR and HRTOFMS experiments. Antifungal activity of the isolates was evaluated against *Cladosporium sphaerospermum* and *Cladosporium cladosporioides*, revealing **5** as the most active.



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* Corresponding author

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