

Phytochemistry Vol. 67, No. 12, 2006

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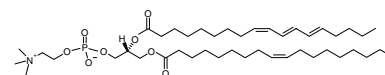
MOLECULAR GENETICS AND GENOMICS

Conjugated fatty acids accumulate to high levels in phospholipids of metabolically engineered soybean and *Arabidopsis* seeds

pp 1166–1176

Edgar B. Cahoon*, Charles R. Dietrich, Knut Meyer, Howard G. Damude, John M. Dyer, Anthony J. Kinney

Conjugated fatty acids accumulate in phospholipids in soybean and *Arabidopsis* seeds engineered to express fatty acid conjugases. By contrast, conjugated fatty acids are efficiently sequestered in triacylglycerol following their synthesis on phosphatidylcholine in seeds that naturally produce high levels of these unusual fatty acids. Shown is *sn*-1 oleoyl, *sn*-2 eleostearoyl phosphatidylcholine.

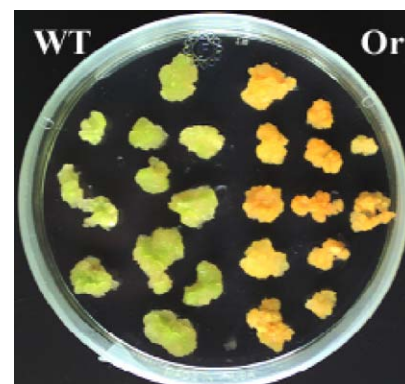


β-Carotene accumulation induced by the cauliflower *Or* gene is not due to an increased capacity of biosynthesis

pp 1177–1184

Li Li*, Shan Lu, Kelly M. Cosman, Elizabeth D. Earle, David F. Garvin, Jennifer O'Neill

The cauliflower *Or* gene induces a high level of β-carotene accumulation in callus cultures, showing the orange phenotype found in the *Or* mutant plant. An inhibition study revealed that the increased carotenoid accumulation in the *Or* calli does not result from an enhanced capacity of carotenoid biosynthesis.



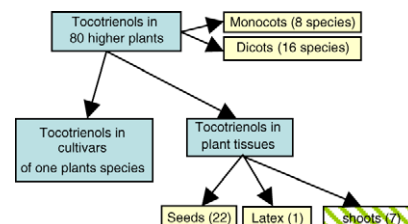
METABOLISM

Differential distribution of tocopherols and tocotrienols in photosynthetic and non-photosynthetic tissues

pp 1185–1195

György Horvath*, Ludger Wessjohann, Joseph Bigirimana, Marcel Jansen, Yves Guisez, Roland Caubergs, Nele Horemans

Tocopherols and tocotrienols are tocopherols that differ with respect to the saturation state of their isoprenoid side chain. Tocopherols are found in numerous plant species and tissues. In contrast, the distribution of tocotrienols is much more limited. Our study revealed that tocotrienols accumulate in substantial amounts in seeds, but not normally in photosynthetic tissues. However, we noted a transient accumulation of tocotrienols in coleoptiles. As we were unable to demonstrate tocotrienol biosynthesis in these coleoptiles, the question is raised whether tocotrienols are translocated from the seed to the young shoot.

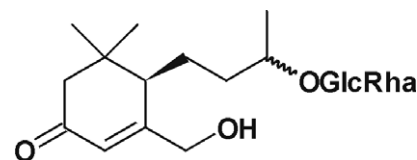


Accumulation of apocarotenoids in mycorrhizal roots of *Ornithogalum umbellatum*

pp 1196–1205

Willibald Schliemann*, Jürgen Schmidt, Manfred Nimtz, Victor Wray,
Thomas Fester, Dieter Strack

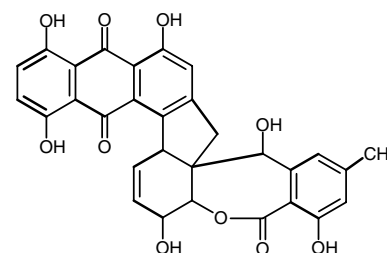
Colonization of roots of *Ornithogalum umbellatum* by the mycorrhizal fungus *Glomus intraradices* resulted in the accumulation of a highly complex apocarotenoid mixture consisting of cyclohexenone derivatives, mycorradicin, mycorradicin derivatives and the “yellow pigment”. The cyclohexenone derivatives are identified as mono-, di- and branched triglycosides of blumenol C and related aglycones.

**Biosynthesis of photodynamically active rubellins and structure elucidation of anthraquinone derivatives produced by *Ramularia collo-cygni***

pp 1206–1213

Sebastian Miethbauer, Susann Haase, Kai-Uwe Schmidtke, Wolfgang Günther,
Ingrid Heiser, Bernd Liebermann*

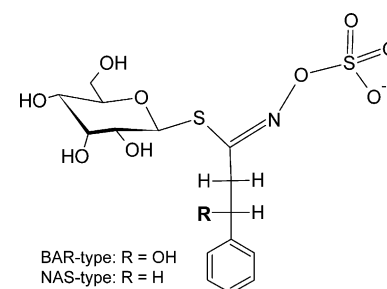
Incorporation of [1-¹³C]-, [2-¹³C]-acetate and [U-¹³C₆]-glucose circumstantiate that rubellins were biosynthesised via the polyketide pathway. The figure shows incorporation of [U-¹³C₆]-glucose into rubellin B. Structures of two anthraquinone derivatives were elucidated. Rubellins generate singlet oxygen and oxygen radicals.

**ECOLOGICAL BIOCHEMISTRY****A heritable glucosinolate polymorphism within natural populations of *Barbarea vulgaris***

pp 1214–1223

Hanneke van Leur*, Ciska E. Raaijmakers, Nicole M. van Dam

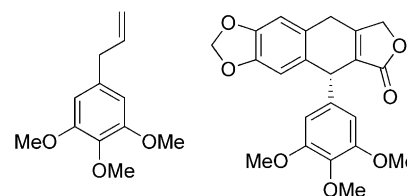
HPLC analyses of different organs of *Barbarea vulgaris* from natural populations in Europe revealed a heritable glucosinolate polymorphism. The most common glucosinolate profile is dominated (94%) by the hydroxylated form, (S)-2-hydroxy-2-phenylethyl-glucosinolate (BAR-type), whereas in the other type 2-phenylethyl-glucosinolate (NAS-type) was most prominent (82%).

**Structure–activity relationship of chemical defenses from the freshwater plant *Micranthemum umbrosum***

pp 1224–1231

Amy L. Lane, Julia Kubanek*

Methoxy, allyl, and lactone functional groups affect the potency of phenylpropanoid and lignoid chemical defenses for a freshwater macrophyte.

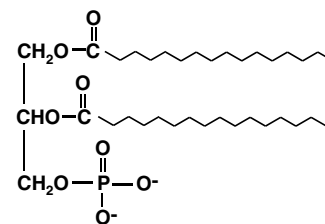


Copper excess triggers phospholipase D activity in wheat roots

pp 1232–1242

Flavia Navari-Izzo*, Benedetta Cestone, Andrea Cavallini, Lucia Natali, Tommaso Giordani, Mike F. Quartacci

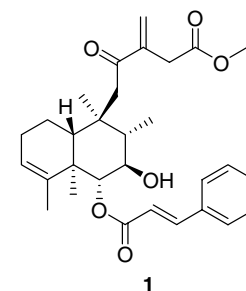
The level of phosphatidic acid was rapidly increased in Cu²⁺-treated wheat roots suggesting the involvement of phospholipase D in copper signal transduction.

**BIOACTIVE PRODUCTS****Cytotoxic clerodane diterpenoids from the leaves of *Premna tomentosa***

pp 1243–1248

Young-Won Chin, William P. Jones, Qiuwen Mi, Ismail Rachman, Soedarsono Riswan, Leonardus B.S. Kardono, Hee-Byung Chai, Norman R. Farnsworth, Geoffrey A. Cordell, Steven M. Swanson, John M. Cassady, A. Douglas Kinghorn*

Three cytotoxic clerodane diterpenoids, premnones A–C (1–3), were isolated from *Premna tomentosa* along with four known flavonoids and three known triterpenoids.

**Biochemical activities of Iranian *Mentha piperita* L. and *Myrtus communis* L. essential oils**

pp 1249–1255

Davod Yadegarinia, Latif Gachkar, Mohammad Bagher Rezaei, Massoud Taghizadeh, Shakiba Alipoor Astaneh, Iraj Rasooli*

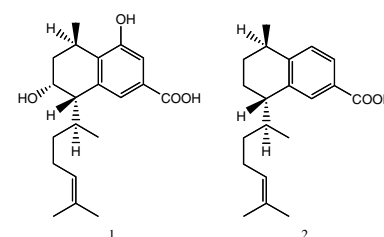
GC–MS analysis of essential oils of Iranian *Mentha piperita* and *Myrtus communis* lead to identification of 26 and 32 compounds, respectively. The oils had good to excellent antimicrobial activities against *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans* with the oil of *M. piperita* being more active. Antioxidant activities assessed by DPPH free radical scavenging and β-carotene/linoleic acid systems revealed greater antioxidant activity of *M. piperita* oil.

**Bactericidal and cyclooxygenase inhibitory diterpenes from *Eremophila sturtii***

pp 1256–1261

Qian Liu, David Harrington, James L. Kohen, Subramanyam Vemulpad, Joanne F. Jamie*

Two serrulatane diterpenes (1) and (2) isolated from *Eremophila sturtii* inhibited the inflammation pathway enzymes cyclooxygenase 1 and 2, and exhibited bactericidal activity against *Staphylococcus aureus*.

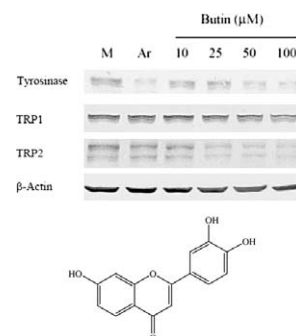


Bioactive constituents of *Spatholobus suberectus* in regulating tyrosinase-related proteins and mRNA in HEMn cells

pp 1262–1270

Mei-Hsien Lee*, Yi-Pei Lin, Feng-Lin Hsu, Gui-Rong Zhan, Kun-Ying Yen

Twelve components were isolated from *Spatholobus suberectus* by using bio-guided assay. Among them, butin (7) is the most active component in reducing expression of cellular tyrosinase and in lowering melanin content in human epidermal melanocytes (HEMn). This inhibition is exerted through inhibition of transcription of the genes encoding tyrosinase, tyrosinase-related proteins 1 and 2.



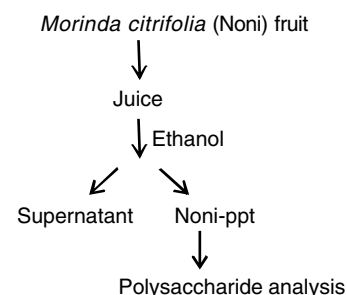
CHEMISTRY

Polysaccharide composition of the fruit juice of *Morinda citrifolia* (Noni)

pp 1271–1275

Anh Kim T. Bui, Antony Bacic, Filomena Pettolino*

Chemical characterisation of the ethanol insoluble fraction of Noni juice (Noni-ppt) shows that it contains predominantly pectic polysaccharides (homogalacturonan, rhamnogalacturonan, arabinan, and type I arabinogalactan), in addition to arabinogalactan-protein and low amounts of xyloglucan, heteroxylan and heteromannan.

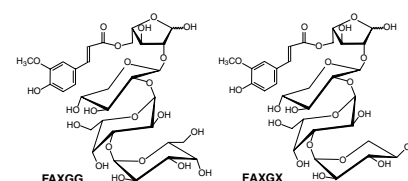


Isolation and structural identification of complex feruloylated heteroxylan side-chains from maize bran

pp 1276–1286

Ella Allerdings, John Ralph, Hans Steinhart, Mirko Bunzel*

α -D-Galactopyranosyl-(1 \rightarrow 3)- α -L-galactopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 2)-5-*O*-*trans*-feruloyl-L-arabinofuranose (FAXGG) and α -D-xylopyranosyl-(1 \rightarrow 3)- α -L-galactopyranosyl-(1 \rightarrow 2)- β -D-xylopyranosyl-(1 \rightarrow 2)-5-*O*-*trans*-feruloyl-L-arabinofuranose (FAXGX), the most complex feruloylated heteroxylan side-chains known to date, have been isolated from maize bran and fully structurally characterized.

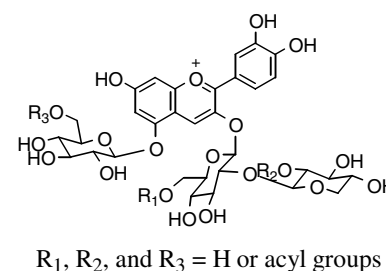


Acylated cyanidin 3-sambubioside-5-glucosides in three garden plants of the Cruciferae

pp 1287–1295

Fumi Tatsuzawa, Norio Saito, Koichi Shinoda, Atsushi Shigihara, Toshio Honda*

Seven acylated cyanidin 3-sambubioside 5-glucoside were isolated from flowers of three garden plants in the Cruciferae. Their structures were established by spectroscopic methods.



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* Corresponding author	

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ISSN 0031-9422

INDEXED/ABSTRACTED IN: *Current Awareness in Biological Sciences (CABS)*, *Curr Cont ASCA*, *Chem. Abstr.*, *BIOSIS Data*, *PASCAL-CNRS Data*, *CAB Inter*, *Cam Sci Abstr*, *Curr Cont/Agri Bio Env Sci*, *Curr Cont/Life Sci*, *Curr Cont Sci Cit Ind*, *Curr Cont SCISEARCH Data*, *Bio Agri Ind*

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