

Phytochemistry Vol. 66, No. 3, 2005

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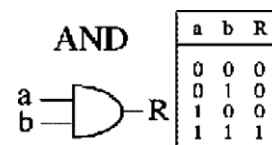
REVIEW

Update in bioinformatics. Toward a digital database of plant cell signalling networks: advantages, limitations and predictive aspects of the digital model

pp 267–276

Marcela Beatriz Treviño Santa Cruz, Dominique Genoud,
Jean-Pierre Métraux, Thierry Genoud*

The properties of a digital modeling of signal transduction networks and the potential benefits of this method for creating a computer database of plant signalling events within a 'digital plant' project are presented.



FULL PAPERS

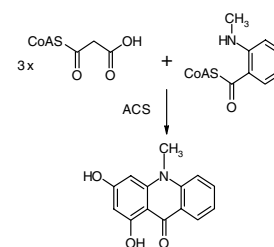
PROTEIN BIOCHEMISTRY

Starter substrate specificities of wild-type and mutant polyketide synthases from Rutaceae

pp 277–284

Richard Lukačín, Stephan Schreiner, Katrin Silber, Ulrich Matern*

Chalcone and acridone synthases catalyse similar condensations of 4-coumaroyl-CoA and *N*-methylantraniloyl-CoA, respectively, with three malonyl-CoAs, and the enzyme polypeptides show 75–85% sequence homology. Mutant chalcone synthases were generated from *Ruta* CHS1 with the aim to confer acridone synthase activity. Homology modeling and docking studies suggested that a Phe267Val and further conformational changes in the periphery of the polypeptide backbone are essentially required.



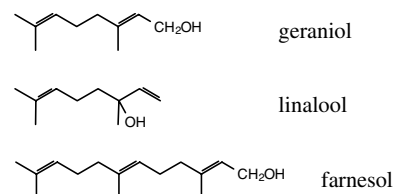
MOLECULAR GENETICS AND GENOMICS

A geraniol-synthase gene from *Cinnamomum tenuipilum*

pp 285–293

Tao Yang, Jing Li, Hao-Xin Wang, Ying Zeng*

A cDNA clone from *Cinnamomum tenuipilum* was isolated, functionally expressed in *Escherichia coli* and thereby identified as a single copy gene coding for a geraniol synthase. The CtGES is more abundantly expressed in leaves of a geraniol chemotype than in those of either linalool or farnesol chemotypes.



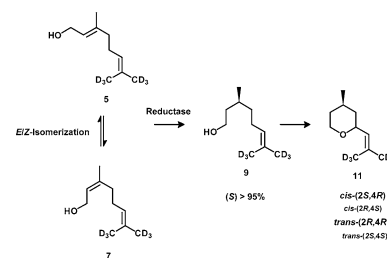
METABOLISM

Metabolism of geraniol in grape berry mesocarp of *Vitis vinifera* L. cv. Scheurebe: demonstration of stereoselective reduction, *E/Z*-isomerization, oxidation and glycosylation

pp 295–303

Fang Luan, Armin Mosandl, Andreas Münch, Matthias Wüst*

The metabolism of deuterium labeled geraniol **5** in grape mesocarp of *Vitis vinifera* L. cv. Scheurebe was studied by in vivo-feeding experiments. Stereoselective reduction to (*S*)-citronellol **9**, stereoselective biosynthesis of the potent odorant *cis*-(2*S*,4*R*)-rose oxide **11** and *E/Z*-isomerization to nerol **7** could be demonstrated.

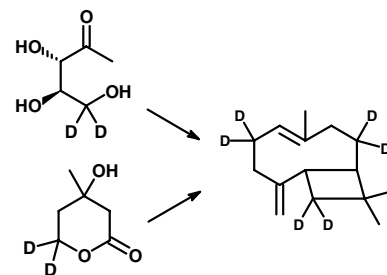


Biosynthesis of mono- and sesquiterpenes in carrot roots and leaves (*Daucus carota* L.): metabolic cross talk of cytosolic mevalonate and plastidial methylerythritol phosphate pathways

pp 305–311

Daniela Hampel, Armin Mosandl, Matthias Wüst*

The biosynthesis of the monoterpenes terpinolene and myrcene and the sesquiterpene β -caryophyllene in roots and leaves of two carrot varieties were investigated.

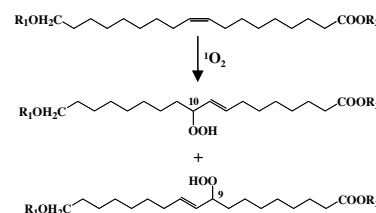


Visible light-induced oxidation of unsaturated components of cutins: a significant process during the senescence of higher plants

pp 313–321

Jean-François Rontani*, Adélaïde Rabourdin, Franck Pinot, Sylvie Kandel, Claude Aubert

Visible light-induced oxidation of 18-hydroxyoleic acid (a cutin component) was observed in senescent leaves of parsley. The photoproducts thus formed were then detected in different natural samples.

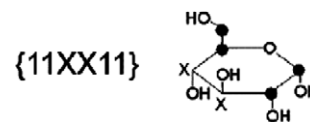


Metabolic flux analysis in complex isotopolog space. Recycling of glucose in tobacco plants

pp 323–335

Christian Ettenhuber, Tanja Radykewicz, Waltraud Kofer, Hans-Ulrich Koop, Adelbert Bacher, Wolfgang Eisenreich*

Tobacco plants grown on agar were supplied with [U-¹³C₆]glucose via the root system. Fourteen glucose isotopologs from leaf extract were analysed by ¹³C NMR and interpreted in terms of their metabolic history.



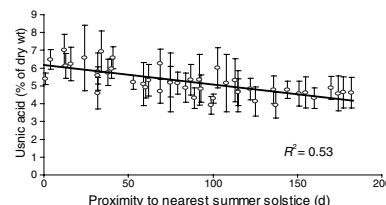
ECOLOGICAL BIOCHEMISTRY

Seasonal trends in usnic acid concentrations of Arctic, alpine and Patagonian populations of the lichen *Flavocetraria nivalis*

pp 337–344

Jarle W. Bjerke*, Arve Elvebakk, Erwin Domínguez, Arne Dahlback

Variations in usnic acid concentrations in four widely separated populations of the lichen *Flavocetraria nivalis* are modestly correlated with time of season, as measured by the proximity in time to nearest summer solstice.



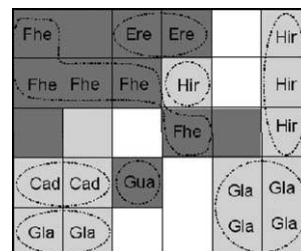
CHEMOTAXONOMY

Sesquiterpene lactone-based classification of three Asteraceae tribes: a study based on self-organizing neural networks applied to chemosystematics

pp 345–353

Fernando B. Da Costa*, Lothar Terfloth, Johann Gasteiger

Encoded 3D structures of sesquiterpene lactones of three tribes of the family Asteraceae were projected into self-organizing maps allowing the prediction of occurrence of structures in taxa.



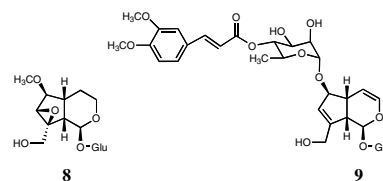
BIOACTIVE PRODUCTS

Anti-protozoal and plasmodial FabI enzyme inhibiting metabolites of *Scrophularia lepidota* roots

pp 355–362

Deniz Tasdemir*, Nadide Deniz Güner, Remo Perozzo, Reto Brun, Ali A. Dönmez, Ihsan Çalis, Peter Ruedi

Nine iridoid glycosides, two of which (**8**, **9**) are new, an iridoid-related aglycone (**10**) and a phenylethanoid glycoside, angoroside C (**11**), were isolated from the roots of *S. lepidota*. Compound **9** showed remarkable leishmanicidal activity (IC_{50} 6.1 μ g/ml), while **10** exhibited anti-malarial (40.6 g/ml) and plasmodial FabI inhibitory potential (IC_{50} 100 μ g/ml). **10** is the second anti-malarial natural product targeting the FabI enzyme of *Plasmodium falciparum*.



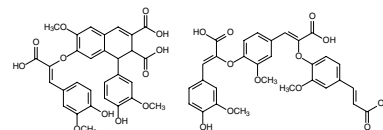
CHEMISTRY

Isolation and structural characterisation of 8-O-4/8-O-4- and 8-8/8-O-4-coupled dehydrotriferulic acids from maize bran

pp 363–371

Carola Funk, John Ralph, Hans Steinhart, Mirko Bunzel*

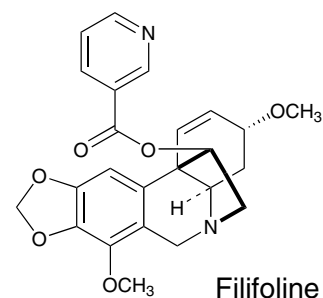
The isolation of two dehydrotriferulic acids from maize bran fiber demonstrates that ferulate trimers contribute to a strong network within the plant cell wall. These trimers do not contain a 5–5-coupled dimeric unit, hinting that more than two polysaccharide chains may be coupled by ferulate oligomers.



Alkaloids from *Nerine filifolia***pp 373–382**

Jerald J. Nair, William E. Campbell, Reto Brun, Francesc Viladomat,
Carles Codina, Jaume Bastida*

The alkaloids *N*-demethylbelladine, 6 α -methoxybuphanidrine and filifoline are described for the first time from bulbs of *Nerine filifolia* (Amaryllidaceae). The nicotinate ester in filifoline was observed to reverse molecular ellipticity as expressed in the shape of the CD curve.

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