

Phytochemistry Vol. 67, No. 9, 2006

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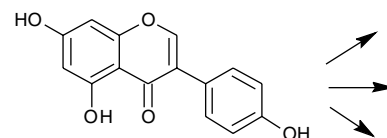
MOLECULES OF INTEREST

Distribution of isoflavonoids in non-leguminous taxa – An update

pp 849–855

Zuzana Mackova, Radka Koblowska, Oldrich Lapcik *

In addition to the Leguminosae, isoflavonoids have been found in at least 52 families falling into four classes of multicellular plants. References on 17 isoflavonoid producing families and 49 isoflavonoids not reviewed so far are given in this contribution.



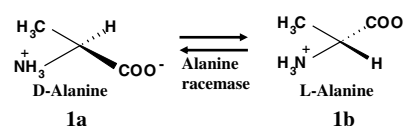
PROTEIN BIOCHEMISTRY

Alanine racemase of alfalfa seedlings (*Medicago sativa* L.): First evidence for the presence of an amino acid racemase in plants

pp 856–860

Kazutoshi Ono, Kazuki Yanagida, Tadao Oikawa *, Tadashi Ogawa, Kenji Soda

We demonstrate several kinds of D-amino acids in plant seedlings, and moreover that of alanine racemase (E.C.5.1.1.1) in alfalfa (*Medicago sativa* L.) seedlings. This is the first evidence for the presence of an amino acid racemase in plants.

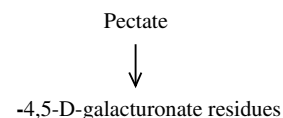


Purification and characterization of pectate lyase from banana (*Musa acuminata*) fruits

pp 861–869

Anurag Payasi, Prakash C. Misra, Girdhar G. Sanwal *

Pectate lyase purified from ripe banana fruits is unique in utilizing Mg^{+2} more efficient than Ca^{+2} as a cofactor.



Purification and characterization of a serine protease from *Cucumis trigonus* Roxburghi

pp 870–875

Mufti Asif-Ullah, Key-Sun Kim, Yeon Gyu Yu *

The major serine protease from the fruit of *Cucumis trigonus* Roxburghi used as a meat tenderizer was purified. The enzymatic characteristics and N-terminal amino acid sequence of the purified protein indicated that it is a homologue of cucumisin, a plant serine type protease.

C. trigonus Roxburghi fruit (Kachri)

↓ Purification

Cucumisin-like serinepr otease

↓ Characterization

High thermo andp Hs tability

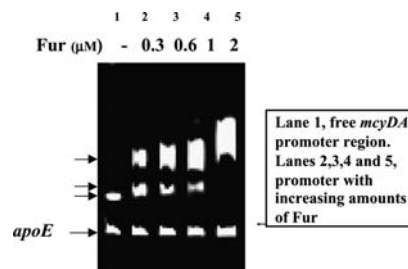
MOLECULAR GENETICS AND GENOMICS

Fur from *Microcystis aeruginosa* binds in vitro promoter regions of the microcystin biosynthesis gene cluster

pp 876–881

Beatriz Martin-Luna, Emma Sevilla, José A. Hernandez, M. Teresa Bes, Maria F. Fillat, M. Luisa Peleato *

Microcystins are potent toxins produced by cyanobacteria under poorly understood environmental conditions. Fur is a transcriptional repressor involved in sensing iron availability and oxidative stress. Fur from *Microcystis aeruginosa* binds promoter regions of *mcy* gene cluster, suggesting that Fur might regulate the expression of genes involved in microcystin synthesis.

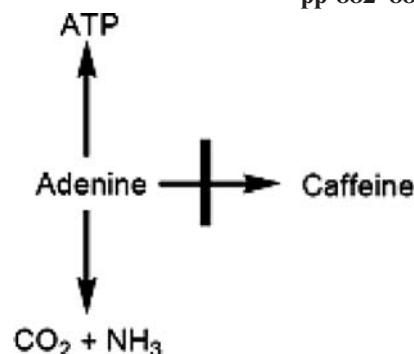


Caffeine biosynthesis and adenine metabolism in transgenic *Coffea canephora* plants with reduced expression of *N*-methyltransferase genes

pp 882–886

Hiroshi Ashihara *, Xin-Qiang Zheng, Riko Katahira, Masayuki Morimoto, Shinjiro Ogita, Hiroshi Sano

Comparison of metabolism of [¹⁴C] adenine and content of purine compounds in wild type and in antisense and RNAi *Coffea canephora* transgenic plants is described.



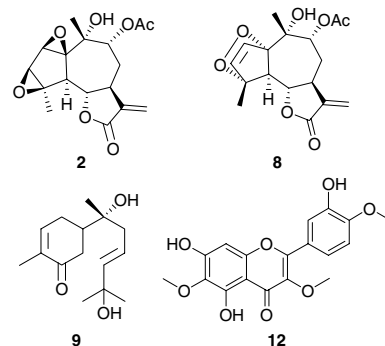
BIOACTIVE PRODUCTS

Cytotoxic constituents of *Achillea clavennae* from Montenegro

pp 887–893

Snežana Trifunović, Vlatka Vajs, Zorica Juranić, Željko Žizak, Vele Tešević, Slobodan Macura, Slobodan Milosavljević *

Guaianolides **1**–**8**, bisabolones **9**–**11**, flavonols **12**–**15**, sesamin and isofraxidin were isolated from the aerial parts of *Achillea clavennae*. Compounds **2** (a new compound) and **8** exhibited significant cytotoxic effects to HeLa, K562 and Fem-X human cancer cell lines, whereas **9** was moderately active. The most active was **12**, already known as the cytotoxic compound.

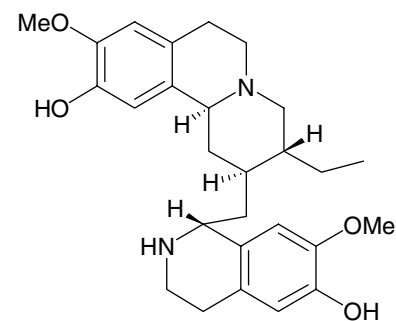


Cytotoxic *Alangium* alkaloids from *Alangium longiflorum*

pp 894–897

Nobuko Sakurai, Kyoko Nakagawa-Goto, Junko Ito, Yojiro Sakurai,
Yuka Nakanishi, Kenneth F. Bastow, Gordon Cragg, Kuo-Hsiung Lee *

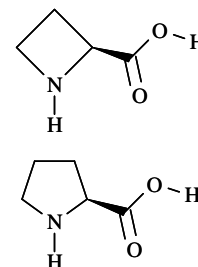
10-*O*-Demethylcephaeline (**2**) exhibited potent cytotoxic activity against human A549 lung carcinoma and MCF-7 breast adenocarcinoma ($ED_{50} = 0.013$ and $0.062 \mu\text{M}$, respectively). Related compounds with different stereochemistry or hydroxy/methoxy substitution patterns were less potent or inactive. Thus, compound **2** merits attention as a cytotoxic lead for further study.

**2**, 10-*O*-Demethylcephaeline**Azetidine-2-carboxylic acid in garden beets (*Beta vulgaris*)**

pp 898–903

Edward Rubenstein *, Haihong Zhou, Karolina M. Krasinska, Allis Chien,
Christopher H. Becker

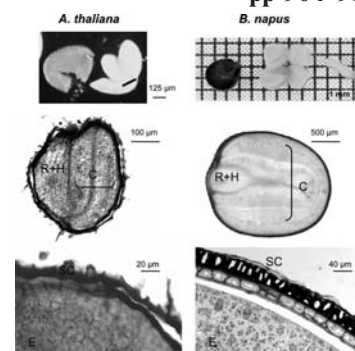
We report the presence of substantial concentrations of L-azetidine-2-carboxylic acid (L-Aze) in garden or table beet (*Beta vulgaris*) and note the potential role of beets in the pathogenesis of congenital and acquired disorders of man and other animals. L-Aze, a homologue of proline, has been found to misincorporate in proteins in mammals and cause fetal malformations.

**CHEMISTRY****Oil content of *Arabidopsis* seeds: The influence of seed anatomy, light and plant-to-plant variation**

pp 904–915

Yonghua Li, Fred Beisson, Mike Pollard, John Ohlrogge *

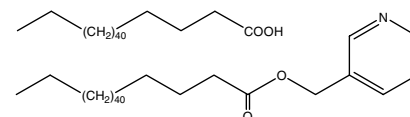
The anatomy of *Arabidopsis* and *Brassica napus* seeds were compared and the distribution of mass, oil and the fatty acid composition of different seed tissues were determined.

**Identification of very long chain fatty acids from sugar cane wax by atmospheric pressure chemical ionization liquid chromatography–mass spectroscopy**

pp 916–923

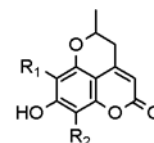
Tomáš Řezanka *, Karel Sigler

A method is described for the enrichment of very long chain fatty acids (VLCFAs) from total fatty acids of sugar cane wax and their identification as picolinyl esters by means of liquid chromatography–mass spectrometry with atmospheric pressure chemical ionization (LC–MS/APCI). The method is based on the use of preparative RP–HPLC of 100 mg and their subsequent identification by microbore LC–MS/APCI. The combination of these two techniques was used to identify unusual saturated VLCFAs up to C_{50} .



Pyranocoumarins from the twigs of *Mammea siamensis***pp 924–928**

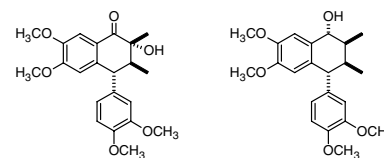
Vilailak Prachyawarakorn, Chulabhorn Mahidol, Somsak Ruchirawat *

Four unusual pyranocoumarins (1–4) were isolated from the dried twigs of *M. siamensis*.

- 1: R₁=prenyl, R₂=COCH₂CH(CH₃)₂
 2: R₁=geranyl, R₂=COCH₂CH(CH₃)₂
 3: R₁=prenyl, R₂=COCH(CH₃)CH₂CH₃
 4: R₁=geranyl, R₂=COCH(CH₃)CH₂CH₃

Aryltetralol and aryltetralone lignans from *Holostylis reniformis***pp 929–937**

Tito da Silva, Lucia M.X. Lopes *

Aryltetralol and aryltetralone lignans were isolated from the hexane extracts of the roots of *Holostylis reniformis*. The structures of these compounds were determined by spectroscopic methods.**OTHER CONTENTS****Book review****p 938****Announcement: The Phytochemical Society of Europe****p I****Author Index****p II****Guide for Authors****pp III–IV**

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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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