

Phytochemistry Vol. 69, No. 14, 2008

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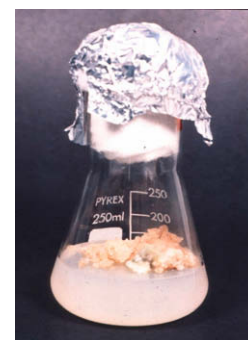
PROTEIN BIOCHEMISTRY AND PROTEOMICS

Characterisation of lipoxygenase isoforms from olive callus cultures

pp 2532–2538

Mark Williams, John L. Harwood*

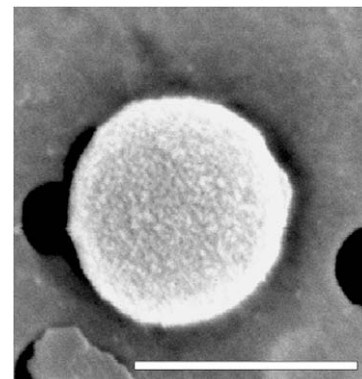
Two lipoxygenase isoforms were separated from olive callus cultures and their properties examined. Both isoforms formed 13-hydroperoxy products, consistent with the volatile derivatives found in olive fruit tissues and their oils.

Initiation of rubber biosynthesis: *In vitro* comparisons of benzophenone-modified diphosphate analogues in three rubber-producing species

pp 2539–2545

Wenshuang Xie, Colleen M. McMahan*, Amanda J. DeGraw, Mark D. Distefano, Katrina Cornish, Maureen C. Whalen, David K. Shintani

Enzymatically-active washed rubber particles produce rubber *in vitro* when provided with appropriate substrates. Here, a series of benzophenone-modified initiator analogues successfully bound to the membrane-localized rubber transferase at the particle surface, and initiated rubber biosynthesis in *Ficus elastica*, *Hevea brasiliensis* and *Parthenium argentatum* (shown in micrograph, scale bar = 1 μ m).

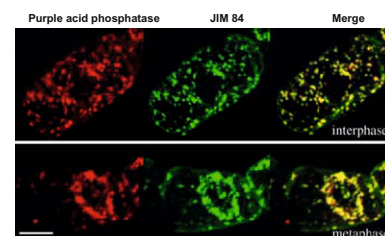


Purple acid phosphatase in the walls of tobacco cells

pp 2546–2551

Rumi Kaida, Takahisa Hayashi*, Takako S. Kaneko

Based on the double-immunofluorescence labeling, the wall-bound purple acid phosphatase might be translocated through the Golgi apparatus to the walls at the interphase and to the cell plate during cytokinesis in the tobacco cells.



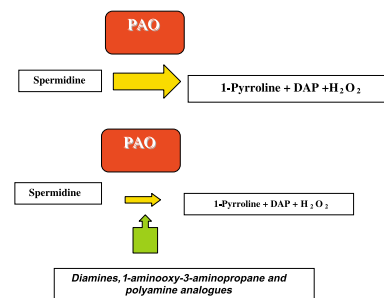
Based on the double immunofluorescence labeling, the wall-bound purple acid phosphatase might be translocated through the Golgi apparatus to the walls at the interphase and to the cell plate during cytokinesis in the tobacco cells.

In vitro and in vivo inhibition of plant polyamine oxidase activity by polyamine analogues

pp 2552–2558

Santiago J. Maiale, María Marina, Diego H. Sánchez, Fernando L. Pieckenstain, Oscar A. Ruiz*

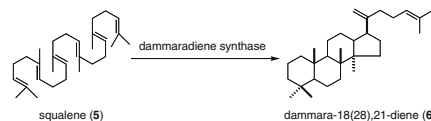
Natural and synthetic amines, 1-aminoxy-3-aminopropane and several polyamine analogues, were found to inhibit plant PAO. The results obtained open up possibilities for investigating potential roles of PAO and PAO-derived H₂O₂ in plant biotic and abiotic stresses.

**MOLECULAR GENETICS AND GENOMICS****Dammaradiene synthase, a squalene cyclase, from *Dryopteris crassirhizoma* Nakai**

pp 2559–2564

Junichi Shinozaki, Masaaki Shibuya, Kazuo Masuda, Yutaka Ebizuka*

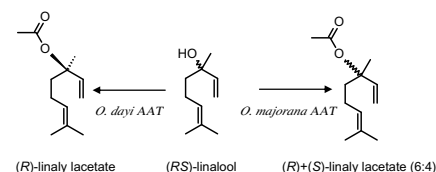
A cDNA named DCD was cloned from *Dryopteris crassirhizoma* by RT-PCR. By functional expression in yeast, DCD was found to encode a dammaradiene synthase which converts squalene (**5**) to dammara-18(28),21-diene (**6**). Compound (**6**) was isolated from leaflets of *D. crassirhizoma*, which have not been reported in this fern.

**METABOLISM****Enantioselective monoterpene alcohol acetylation in *Origanum*, *Mentha* and *Salvia* species**

pp 2565–2571

Olga Larkov, Alon Zaks, Einat Bar, Efraim Lewinsohn, Nativ Dudai, Alfred M. Mayer, Uzi Ravid*

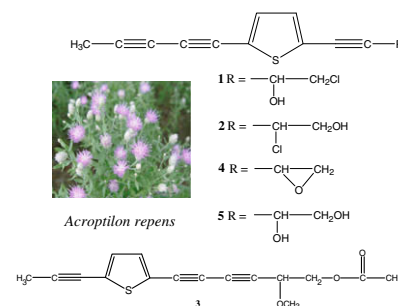
Selected plants within the *Origanum*, *Mentha* and *Salvia* genera, that contain significant amounts of chiral volatile alcohols and their related acetates, exhibit remarkable enantiospecificity of alcohol acetyl transferase (AAT) activity and particularly can discriminate between linalool enantiomers. *Origanum dayi* AAT produced enantiomerically pure (*R*)-linalyl acetate by enzymatic acetylation of racemic linalool whereas the closely related *O. majorana* AAT produced a mixture of (*R*)- and (*S*)-linalyl acetate. V_{\max} of *O. dayi* acetylation activity was 30-fold higher for (*R*)-linalool, while in *O. majorana* no such differences were found.

**ECOLOGICAL BIOCHEMISTRY****Phytotoxic polyacetylenes from roots of Russian knapweed (*Acroptilon repens* (L.) DC.)**

pp 2572–2578

Naira Quintana, Tiffany L. Weir, Jiang Du, Corey D. Broeckling, Julie P. Rieder, Frank R. Stermitz, Mark W. Paschke, Jorge M. Vivanco*

Acroptilon repens represents one of the most threatened invasive weeds of North America. The bioassay-guided fractionation of this species yielded five acetylenic compounds; one hitherto unknown. The presence of these compounds in the exudates and the soil surrounding the plant was also investigated. Contrary to previous reports, the root exudates did not contain 7,8-benzoflavone.

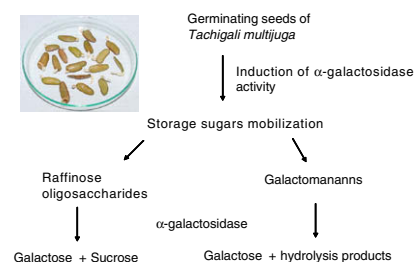


Characterization and biotechnological application of an acid α -galactosidase from *Tachigali multijuga* Benth. seeds

pp 2579–2585

Lílian da Silva Fialho, Valéria Monteze Guimarães, Carina Marin Callegari, Angélica Pataro Reis, Daianny Silveira Barbosa, Eduardo Euclydes de Lima Borges, Maurilio Alves Moreira, Sebastião Tavares de Rezende*

The α -galactosidase activity increased during *Tachigali multijuga* seed germination. The purified enzyme showed an ability to hydrolyze oligosaccharides such as raffinose, stachyose, and galactomannan polymers, indicating that it may play a special role during germination.

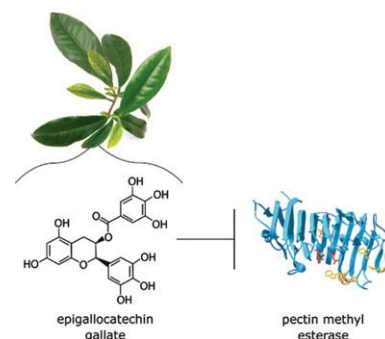


Inhibition of pectin methyl esterase activity by green tea catechins

pp 2586–2592

Kristin C. Lewis*, Tzvia Selzer, Chen Shahar, Yael Udi, Dmitry Tworowski, Irit Sagi*

Pectin methyl esterases and their endogenous inhibitors are involved in many processes in plant physiology. Exogenous inhibitors of PME can be used to further our understanding of these processes. We identify the green tea catechin epigallocatechin gallate as a natural inhibitor of pectin methyl esterases from multiple taxa.

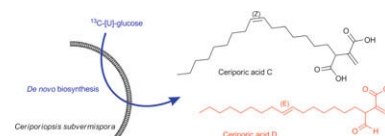


De novo synthesis of (Z)- and (E)-7-hexadecenylitaconic acids by a selective lignin-degrading fungus, *Ceriporiopsis subvermispota*

pp 2593–2602

Hiroshi Nishimura, Saeko Tsuda, Hitoe Shimizu, Yasunori Ohashi, Takahito Watanabe, Yoichi Honda, Takashi Watanabe*

Ceriporic acids are a class of alk(en)ylitaconic acids produced by a selective lignin-degrading fungus, *Ceriporiopsis subvermispota*. We found that *C. subvermispota* produced (E)-7-hexadecenylitaconic acid (ceriporic acid D). (Z)-7-Hexadecenylitaconic acid (ceriporic acid C) and ceriporic acid D were biosynthesised *de novo* using glucose as a sole carbon source.

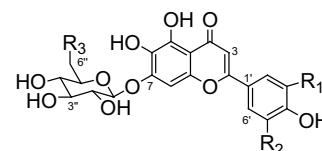


Flavones and flavone glycosides from *Halophila johnsonii*

pp 2603–2608

Yanhui Meng, Amanda J. Krzysiak, Michael J. Durako, Jennifer I. Kunzelman, Jeffrey L.C. Wright*

Chemical investigation of the shallow-water sea grass *Halophila johnsonii* yielded seven flavone glycosides together with three known flavone glycosides and five known flavones. These compounds appear to play an important role in protecting the sea grass from UV damage.



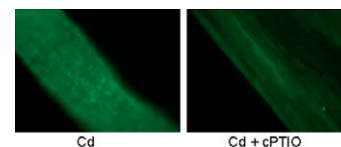
1. $R_1 = R_2 = \text{OH}$; $R_3 = \text{OH}$
2. $R_1 = R_2 = \text{OH}$; $R_3 = 6''\text{-O-acetyl}$
3. $R_1 = \text{OH}$; $R_2 = \text{H}$; $R_3 = 6''\text{-O-acetyl}$
4. $R_1 = R_2 = \text{H}$; $R_3 = 6''\text{-O-acetyl}$
5. $R_1 = R_2 = R_3 = \text{H}$; $R_3 = 6''\text{-O-E-coumaryl}$
6. $R_1 = R_2 = \text{H}$; $R_3 = 6''\text{-O-E-Caffeoyl}$
7. $R_1 = \text{OH}$; $R_2 = \text{H}$; $R_3 = 6''\text{-O-E-coumaryl}$

Nitric oxide, polyamines and Cd-induced phytotoxicity in wheat roots

pp 2609–2615

M.D. Groppa*, E.P. Rosales, M.F. Iannone, M.P. Benavides

Cadmium, polyamines and SNP elevated endogenous NO contents and reduced root growth rates. The NO-trapping agent cPTIO considerably reverted root growth inhibition confirming that NO was, at least in part, responsible for this inhibition. However, other ROS might also be involved in Cd and Spm phytotoxicity.



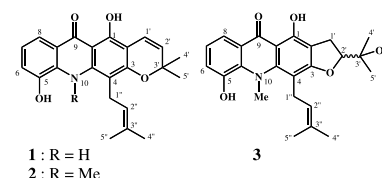
BIOACTIVE PRODUCTS

Potential anti-allergic acridone alkaloids from the roots of *Atalantia monophylla*

pp 2616–2620

Arnon Chukaew, Chanita Ponglimanont*, Chatchanok Karalai, Supinya Tewtrakul

Cycloatalaphylline-A (**1**), *N*-methylcycloatalaphylline-A (**2**) and *N*-methyl-buxifoliadine-E (**3**) along with eight known acridone alkaloids and two known coumarins were isolated from the root of *Atalantia monophylla*. Some compounds possessed appreciable anti-allergic activity in RBL-2H3 cell models.

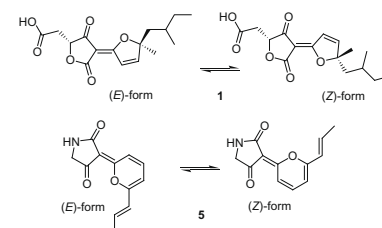


Cytotoxic and antiplasmodial substances from marine-derived fungi, *Nodulisporium* sp. and CRI247-01

pp 2621–2626

Chairut Kasettrathat, Nattaya Ngamrojanavanich, Suthep Wiyakrutta, Chulabhorn Mahidol, Somsak Ruchirawat, Prasat Kittakoop*

Nodulisporacid A (**1**) and vermelhotin (**5**) were isolated from marine-derived fungi. Esters of nodulisporacid A (**1**) and vermelhotin (**5**) exhibited cytotoxic activity. **1** and **5** exhibited moderate antiplasmodial activity.

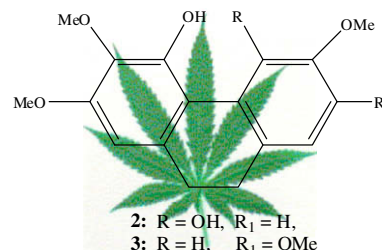


Non-cannabinoid constituents from a high potency *Cannabis sativa* variety

pp 2627–2633

Mohamed M. Radwan, Mahmoud A. ElSohly*, Desmond Slade, Safwat A. Ahmed, Lisa Wilson, Abir T. El-Alfy, Ikhlas A. Khan, Samir A. Ross*

Six new non-cannabinoid constituents (**1–6**) have been isolated from a high potency *Cannabis sativa* L. variety, along with five known compounds (**7–11**). Structure elucidation was accomplished through analysis of 1D and 2D NMR spectroscopic data. All isolates were tested for antimicrobial, antileishmanial, antimalarial and anti-oxidant activities. The analgesic activities of **2–4** in mice were also tested.



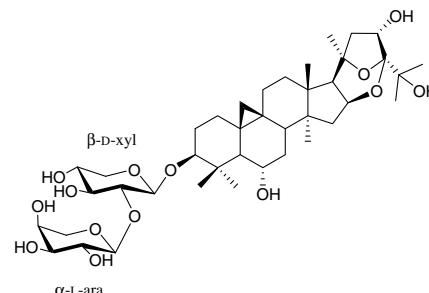
CHEMISTRY

Cycloartane glycosides from *Astragalus campylosema* Boiss. ssp. *campylosema*

pp 2634–2638

İhsan Çalış*, Ali A. Dönmez, Angela Perrone, Cosimo Pizza, Sonia Piacente*

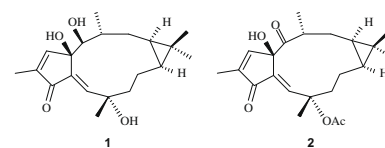
Four cycloartane glycosides were isolated from the MeOH extract of the roots of *Astragalus campylosema* ssp. *campylosema*. Their structures were established by the extensive use of 1D- and 2D-NMR experiments along with ESIMS and HRMS analysis.

Diterpenoids from *Jatropha multifida*

pp 2639–2641

Biswanath Das*, Bommena Ravikanth, Kongara Ravinder Reddy, Ponnaboina Thirupathi, Tuniki Venugopal Raju, Balasubramanian Sridhar

Chemical investigation of the stems of *Jatropha multifida* yielded two diterpenoids along with five known diterpenoids, a flavone and a coumarino-lignan.



OTHER CONTENTS

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