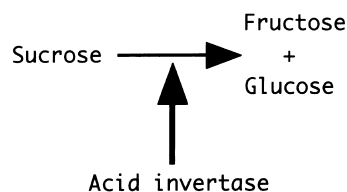


## Purification and characterization of two soluble acid invertase isozymes from Japanese pear fruit

Hiroshi Hashizume, Koji Tanase, Katsuhiro Shiratake, Hitoshi Mori, Shohei Yamaki

Laboratory of Horticultural Science, Graduate School of Bioagricultural Science, Nagoya University, Chikusa, Nagoya 464-8601, Japan

Acid invertases (AIV I and AIV II), which hydrolyze sucrose, were purified to near homogeneity from Japanese pear fruit. They were separated by hydroxyapatite column chromatography, and named AIV I and AIV II. Some enzymatic properties are reported.



Phytochemistry, 2003, **63**, 125

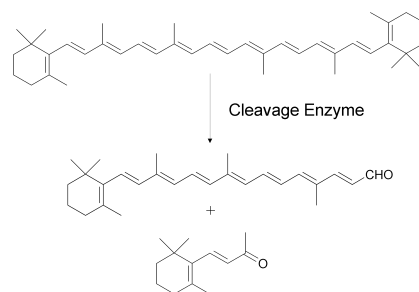
## Enzymatic carotenoid cleavage in star fruit (*Averrhoa carambola*)

Peter Fleischmann<sup>a</sup>, Naoharu Watanabe<sup>b</sup>, Peter Winterhalter<sup>a</sup>

<sup>a</sup>Institut für Lebensmittelchemie, Technische Universität Braunschweig, Schleinitzstrasse 20, D-38106 Braunschweig, Germany

<sup>b</sup>Department of Applied Biological Chemistry, Faculty of Agriculture, Shizuoka University, 836 Ohya, Shizuoka 422-4870, Japan

A carotenoid cleavage enzyme from *Averrhoa carambola* (Oxalidaceae) was detected, partially purified and characterized kinetically.  $\beta$ -Ionone was detected as the primary reaction product.



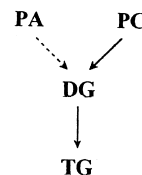
Phytochemistry, 2003, **63**, 131

## Lipid biosynthesis in developing perilla seeds

Ken'ichi Ichihara, Yasumasa Suda

Biological Chemistry, Faculty of Agriculture, Kyoto Prefectural University, Shimogamo, Kyoto 606-8522, Japan

*Perilla frutescens* var. *crispa* accumulated triacylglycerol rich in  $\alpha$ -linolenate during a limited, short period of seed development. It was suggested that the diacylglycerol precursor of the triacylglycerol synthesis is not directly derived from phosphatidic acid that is formed from 1-acylglycerol 3-phosphate through the glycerol phosphate pathway.



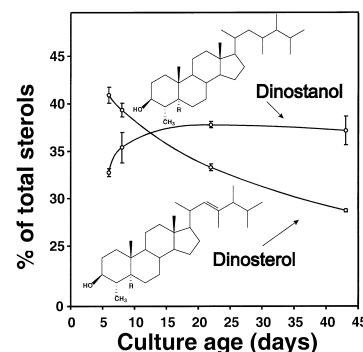
Phytochemistry, 2003, **63**, 139

## The effect of growth phase on the lipid class, fatty acid and sterol composition in the marine dinoflagellate, *Gymnodinium* sp. in batch culture

Maged P. Mansour, John K. Volkman, Susan I. Blackburn

CSIRO Marine Research, GPO Box 1538, Hobart, Tasmania 7001, Australia

Lipid classes, fatty acids and sterols were analysed during the growth phases in batch cultures of *Gymnodinium* sp. The lipid, including polar lipid, triacylglycerol and 22:6(n-3) (DHA) content was maximized at linear growth phase.



Phytochemistry, 2003, **63**, 145

Phytochemistry, 2003, **63**, 155

## Density-dependent patterns of thiamine and pigment production in the diatom *Nitzschia microcephala*

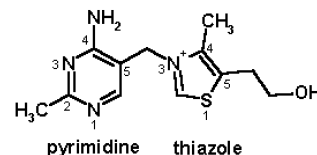
Ernani Pinto<sup>a,b</sup>, Lies Van Nieuwerburgh<sup>a</sup>, Marcelo Paes de Barros<sup>c</sup>, Marianne Pedersén<sup>c</sup>, Pio Colepicolo<sup>b</sup>, Pauli Snoeijs<sup>a</sup>

<sup>a</sup>Department of Plant Ecology, Evolutionary Biology Centre, Uppsala University, Villavägen 14, SE-75236 Uppsala, Sweden

<sup>b</sup>Departamento de Bioquímica, Instituto de Química, Universidade de São Paulo, CP 26077, CEP 05599-970, São Paulo, Brazil

<sup>c</sup>Department of Botany, Physiology Section, Stockholm University, SE-10691 Stockholm, Sweden

We investigated how intraspecific (density-dependent) competition for nutrients by the diatom *Nitzschia microcephala* affects the level of oxidative stress in the algal cells as well as their production of pigments and thiamine. We conclude that eutrophication (higher cell densities) may alter the quality of microalgae as food items for higher trophic levels not only by species shifts in the phytoplankton, but also by changes in the cellular nutritional value within species.

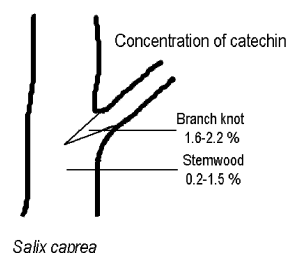


## Phenolic extractives in *Salix caprea* wood and knots

Suvi P. Pohjamo, Jarl E. Hemming, Stefan M. Willför, Markku H.T. Reunanen, Bjarne R. Holmbom

Process Chemistry Group, Åbo Akademi University, Porthansgatan 3, FIN-20500 Turku/Åbo, Finland

Concentrations of phenolic extractives were higher in the knots than in the stemwood of *Salix caprea*.

Phytochemistry, 2003, **63**, 171

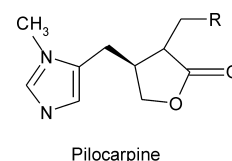
## Induction of pilocarpine formation in jaborandi leaves by salicylic acid and methyljasmonate

Graziela Avancini<sup>a</sup>, Ilka N. Abreu<sup>a</sup>, Marleny D.A. Saldaña<sup>b</sup>, Rahoma S. Mohamed<sup>b</sup>, Paulo Mazzafera<sup>a</sup>

<sup>a</sup>Departamento de Fisiologia Vegetal, Instituto de Biologia, CP 6109, Universidade Estadual de Campinas, CEP 13083-970, Campinas, SP, Brazil

<sup>b</sup>Faculdade de Engenharia Química, Universidade Estadual de Campinas, CEP 13083-970, Campinas, SP, Brazil

Pilocarpine was induced by salicylic acid and methyljasmonate in leaves of jaborandi, but the increase was dependent on the concentration and time after exposure.

Phytochemistry, 2003, **63**, 177

## Characterization of the wound-induced material in *Citrus paradisi* fruit peel by carbon-13 CP-MAS solid state NMR spectroscopy

Simona Lai<sup>a</sup>, Adolfo Lai<sup>a</sup>, Richard R. Stange Jr.<sup>b</sup>, T. Greg McCollum<sup>b</sup>, Mario Schirra<sup>c</sup>

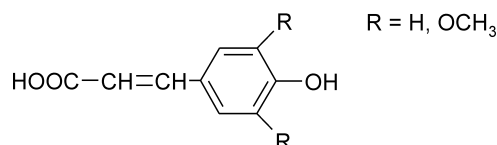
<sup>a</sup>Dipartimento di Scienze Chimiche, Università di Cagliari, Complesso Universitario di Monserrato, Strada Statale 554, Bivio per Sestu, I-09042 Monserrato, Cagliari, Italy

<sup>b</sup>US Horticultural Research Laboratory, USDA-ARS, 2001 South Rock Road, Ft. Pierce, FL 34945, USA

<sup>c</sup>CNR Istituto di Scienze delle Produzioni Alimentari, Unità Staccata di Oristano, Località Palloni, Nuraxinieddu, I-09170 Oristano, Italy

The formation of a suberin like biopolymer occurred in the wound-induced material of grapefruit peel. The recognition and characterization of the related aliphatic and aromatic components were performed using carbon-13 CP-MAS NMR.

typical aromatic component of suberin



## Alkaloids from *Dictyoloma vandellianum*: their chemosystematic significance

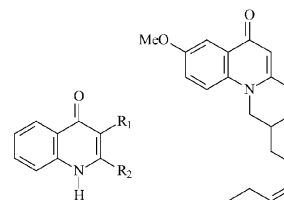
Claudenice F. Providelo Sartor<sup>a</sup>, M. Fátima das G.F. da Silva<sup>a</sup>, João B. Fernandes<sup>a</sup>, Paulo C. Vieira<sup>a</sup>, Edson Rodrigues Fo<sup>a</sup>, Diógenes A. Garcia Cortez<sup>b</sup>

<sup>a</sup>Departamento de Química, Universidade Federal de São Carlos, Caixa Postal 676, 13565-905, São Carlos, SP, Brazil

<sup>b</sup>Departamento de Farmácia e Farmacologia, Universidade Estadual de Maringá, Maringá - PR, Brazil

*Dictyoloma vandellianum* afforded five alkaloids **2**-(14'-hydroxy-14',15'-dimethylhexadecanyl)-4-quinolone, **2**-(12'-hydroxy-12-methyltridecanyl)-3-methoxy-4-quinolone, **2**-(12'-hydroxy-12-methyltridecanyl)-4-quinolone, **2**-(14'-hydroxy-14',15'-dimethylhexadecanyl)-3-methoxy-4-quinolone, 6-methoxydictyolomide A. The chemosystematic relationship is discussed.

Phytochemistry, 2003, **63**, 185



R<sub>1</sub> = H, R<sub>2</sub> = (CH<sub>2</sub>)<sub>13</sub>C(Me)(OH)CH(Me)<sub>2</sub>  
 R<sub>1</sub> = OMe, R<sub>2</sub> = (CH<sub>2</sub>)<sub>11</sub>C(OH)(Me)<sub>2</sub>  
 R<sub>1</sub> = H, R<sub>2</sub> = (CH<sub>2</sub>)<sub>11</sub>C(OH)(Me)<sub>2</sub>  
 R<sub>1</sub> = OMe, R<sub>2</sub> = (CH<sub>2</sub>)<sub>13</sub>C(Me)(OH)CH(Me)<sub>2</sub>

## Piperidine alkaloids from *Piper methysticum*

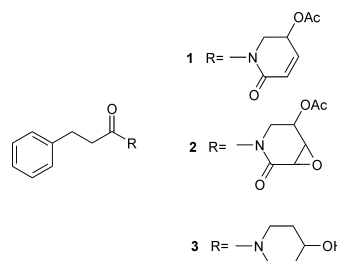
Klaus Dragull<sup>a</sup>, Wesley Y. Yoshida<sup>b</sup>, Chung-Shih Tang<sup>a</sup>

<sup>a</sup>Department of Molecular Biosciences and Bioengineering, University of Hawaii at Manoa, 1955 East-West Road Agricultural Science 218, Honolulu HI 96822, USA

<sup>b</sup>Department of Chemistry, University of Hawaii at Manoa, 2545 McCarthy Mall, Honolulu HI 96822, USA

The concentrations of pipermethystine (**1**), and the new alkaloids 3 $\alpha$ ,4 $\alpha$ -epoxy-5 $\beta$ -pipermethystine (**2**) and awaine (**3**) in kava are cultivar and plant part dependent.

Phytochemistry, 2003, **63**, 193



## Genotoxic and antigenotoxic effects of catechin and tannins from the bark of *Hamamelis virginiana* L. in metabolically competent, human hepatoma cells (Hep G2) using single cell gel electrophoresis

Andreas Dauer<sup>a</sup>, Andreas Hensel<sup>a</sup>, Evelyne Lhoste<sup>b</sup>, Siegfried Knasmüller<sup>c</sup>, Volker Mersch-Sundermann<sup>d</sup>

<sup>a</sup>Hochschule Wädenswil, University of Applied Sciences, Pharmaceutical Biotechnology, Box 335, Gruental, CH-8820 Wädenswil, Switzerland

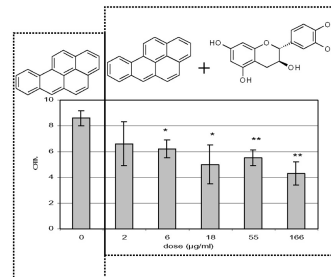
<sup>b</sup>INRA-UEPSD, Domaine de Vilvert, F-78350 Jouy en Josas, France

<sup>c</sup>Institute of Cancer Research, University of Vienna, Borschkegasse 8a, A-1090 Vienna, Austria

<sup>d</sup>Department of Indoor and Environmental Toxicology, University of Giessen, Aulweg 123, D-35385 Giessen, Germany

The genotoxic and antigenotoxic activities of catechin, hamamelitannin and two proanthocyanidin fractions prepared from the bark of *Hamamelis virginiana* L. in a human derived hepatoma cell line are reported.

Phytochemistry, 2003, **63**, 199



## Soybean isoflavones inhibit tumor necrosis factor- $\alpha$ -induced apoptosis and the production of interleukin-6 and prostaglandin E<sub>2</sub> in osteoblastic cells

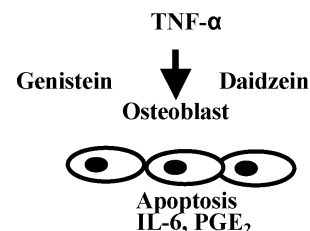
Kwang Sik Suh<sup>a</sup>, Gwanpyo Koh<sup>a</sup>, Cheol Young Park<sup>a</sup>, Jeong Taek Woo<sup>a</sup>, Sung Woon Kim<sup>a</sup>, Jin Woo Kim<sup>a</sup>, In Kook Park<sup>b</sup>, Young Seol Kim<sup>a</sup>

<sup>a</sup>Division of Endocrinology and Metabolism, Department of Internal Medicine, Endocrine Research Institute, Kyung Hee University School of Medicine, 1 Hoeki-dong, Dongdaemun-ku, Seoul, 130-702, South Korea

<sup>b</sup>Department of Biology, Dongguk University, Seoul 100-715, South Korea

We have investigated the effects of soybean isoflavones on tumor necrosis factor- $\alpha$ -induced apoptosis and the production of local factors in osteoblastic cells.

Phytochemistry, 2003, **63**, 209



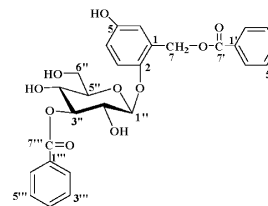
## Phenolic glycosides from *Symplocos racemosa*: natural inhibitors of phosphodiesterase I

Phytochemistry, 2003, **63**, 217

Viqar Uddin Ahmad, Muhammad Athar Abbasi, Hidayat Hussain, Muhammad Nadeem Akhtar, Umar Farooq, Naheed Fatima, M. Iqbal Choudhary

H.E.J. Research Institute of Chemistry, International Center for Chemical Sciences, University of Karachi, Karachi-75270, Pakistan

One new phenolic glycoside named benzoysalireposide (**1**) along with one known phenolic glycoside named salireposide (**2**) have been isolated from *Symplocos racemosa*. Four other known compounds i.e.  $\beta$ -amyrin (**3**), oleonic acid (**4**),  $\beta$ -sitosterol (**5**) and  $\beta$ -sitosterol glycoside (**6**) were also isolated from this plant. The structure elucidation of the isolated compounds was based primarily on 1D- and 2D-NMR analysis, including COSY, HMQC, and HMBC correlations. The compound **1** and **2** showed inhibitory activity against snake venom phosphodiesterase I.



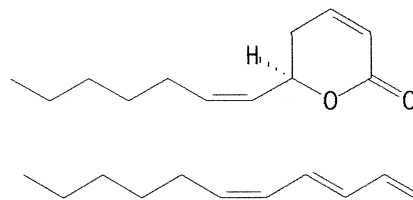
## Volatile constituents of *Aristolochia argentina*

Phytochemistry, 2003, **63**, 221

Horacio A. Priestap, Catalina M. van Baren, Paola Di Leo Lira, J.D. Coussio, Arnaldo L. Bandoni

Cátedra de Farmacognosia, IQUIMEFA (UBA-CONICET), Facultad de Farmacia y Bioquímica, Universidad de Buenos Aires, Junín 956 (1113), Buenos Aires, Argentina

The essential oils of *Aristolochia argentina* were analyzed. A total of 43 components were identified, most of them being known terpenes, but the oils are characterized by the unusual presence of argetilactone and undecatriene isomers. Argetilactone accounts for 57–89% of the total essential oils and was also detected in a medicinal commercial tincture of *Aristolochia argentina*.



## Secondary metabolites from the liverwort *Jamesoniella colorata*

Phytochemistry, 2003, **63**, 227

Ursula Maria Hertewich, Josef Zapp, Hans Becker

FR 8.7, Pharmakognosie und Analytische Phytochemie der Universität des Saarlandes, D-66041 Saarbrücken, Germany

Six new labdane type diterpenoids, three *seco*-clerodane diterpenoids, the sesquiterpene waitziacuminone and a new chlorinated bisbibenzyl have been isolated from the liverwort *Jamesoniella colorata*. Their structures were elucidated by NMR spectroscopy.

