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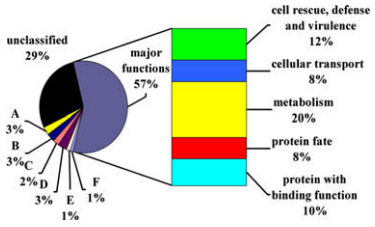
PROTEIN BIOCHEMISTRY

Comprehensive proteome analysis of lettuce latex using multidimensional protein-identification technology **pp 570–578**

Won Kyong Cho, Xiong-Yan Chen, Nazim Mohamad Uddin, Yeonggil Rim, Juyeon Moon, Jin-Hee Jung, Chunlin Shi, Hyosub Chu, Suwha Kim, Seon-Won Kim, Zee-Yong Park, Jae-Yean Kim*

Each of the unique proteins was classified according to the FunCat groups. Functional classification of the 587 latex proteins were identified. A: transcription, B: protein synthesis, C: interaction with the environment, D: development, E: cellular communication, and F: cell cycle and DNA processing.

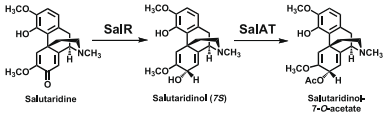


METABOLISM

RNA*i* suppression of the morphine biosynthetic gene *salAT* and evidence of association of pathway enzymes **pp 579–589**

Katja Kempe, Yasuhiro Higashi, Susanne Frick, Khaled Sabarna, Toni M. Kutchan*

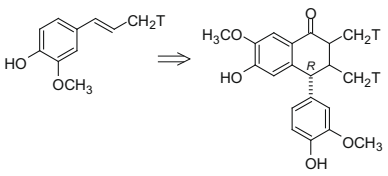
Yeast two-hybrid and co-immunoprecipitation analyses indicate an interaction between the morphine biosynthetic enzymes SalR and SalAT, and SalAT RNA*i* suppression leads to an accumulation of the substrate of SalR.



Biosynthesis of antimalarial lignans from *Holostylis reniformis* **pp 590–596**

Gisele B. Messiano, Tito da Silva, Isabele R. Nascimento, Lucia M.X. Lopes*

Radiolabelled precursor administrated experiments showed that lignans from *Holostylis reniformis* are derived from isoeugenol and that *H. reniformis* exhibits regioselective control of radical–radical coupling (isoeugenol radical). Regiospecific control over propenylphenol-derived lignan biosynthesis was observed, together with diastereoselective control of C2–C7′ bond for aryltetralone lignans (7′*R*).

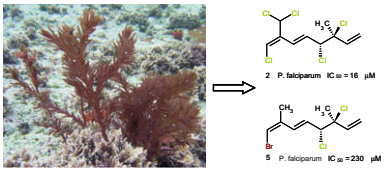


BIOACTIVE PRODUCTS

Antiplasmodial halogenated monoterpenes from the marine red alga *Placamium cornutum* **pp 597–600**

Anthonia F. Afolayan, Maryssa G.A. Mann, Carmen A. Lategan, Peter J. Smith, John J. Bolton, Denzil R. Beukes*

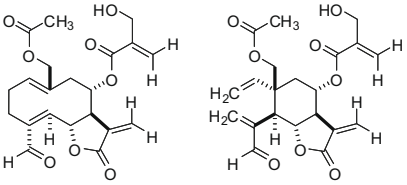
An investigation of the antiplasmodial organic extracts of *Placamium cornutum* resulted in the isolation of three known and two halogenated monoterpenes. Compounds bearing the 7-dichloromethyl substituent showed significantly higher antiplasmodial activities compared to a 7-methyl substituent.



Antimalarial sesquiterpene lactones from *Distephanus angulifolius* **pp 601–607**

Martin M. Pedersen, Jude C. Chukwujekwu, Carmen A. Lategan, Johannes van Staden, Peter J. Smith, Dan Staerk*

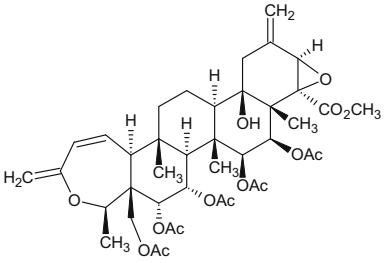
Two sesquiterpene lactones (6*S*,7*R*,8*S*)-14-acetoxy-8-[2-hydroxymethylacrylat]-15-helianga-1(10),4,11(13)-trien-15-al-6,12-olid and (5*R*,6*R*,7*R*,8*S*,10*S*)-14-acetoxy-8-[2-hydroxymethylacrylat]-elema-1,3,11(13)-trien-15-al-6,12-olid as well as vernodalol, vernodalin and 11,13β-hydroxyvernodalin were isolated from *Distephanus angulifolius*. Antiplasmodial activity of the isolated compounds is reported.



Leishmanicidal effect of LLD-3 (1), a nor-triterpene isolated from *Lophanthera lactescens* **pp 608–614**

M.G.M. Danelli, D.C. Soares, H.S. Abreu, L.M.T. Peçanha, E.M. Saraiva*

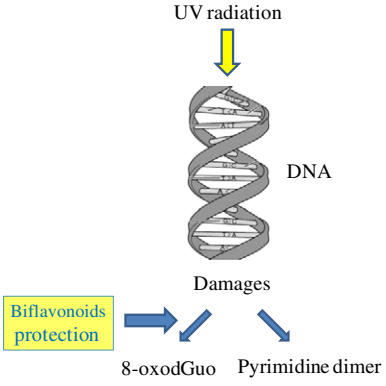
Leishmanicidal activity of 6α, 7α, 15β, 16β, 24-pentacetoxy-22α-carbometoxy-21β,22β-epoxy-18β–hydroxy-27,30-bisnor-3,4-secofriedela-1,20 (29)-dien-3,4 *R*-olide (LLD-3 (**1**)) was demonstrated against intramacrophage amastigotes forms (IC_{50} of 0.41 μg/mL). The *in vitro* leishmanicidal effect of Glucantime, the first choice drug for leishmaniasis treatment, was increased by the LLD-3 (**1**) association. The leishmanicidal effect of LLD-3 (**1**) was not due to stimulation of nitric oxide production by macrophages.



Biflavonoids from *Araucaria angustifolia* protect against DNA UV-induced damage **pp 615–620**

Lydia F. Yamaguchi*, Massuo J. Kato, Paolo Di Mascio*

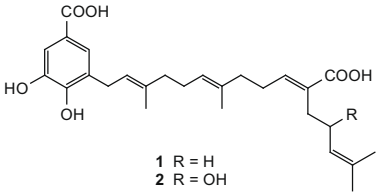
Amentoflavone-type biflavonoids, obtained from needles of *Araucaria angustifolia*, protect calf thymus DNA from UV-radiation induced damage by prevention of pyrimidine dimerization and nucleotide oxidation.



Antiparasitic activity of prenylated benzoic acid derivatives from *Piper* species **pp 621–627**

Ninoska Flores, Ignacio A. Jiménez, Alberto Giménez, Grace Ruiz, David Gutiérrez, Genevieve Bourdy, Isabel L. Bazzocchi*

Three prenylated hydroxybenzoic acids 3-[(2*E*,6*E*,10*E*)-11-carboxy-3,7,15-trimethyl-2,6,10,14-hexadecatetraenyl)-4,5-dihydroxy benzoic acid, 3-[(2*E*,6*E*,10*E*)-11-carboxy-13-hydroxy-3,7,15-trimethyl-2,6,10,14-hexadecatetraenyl]-4,5-dihydroxybenzoic acid and 3-[(2*E*,6*E*,10*E*)-11-carboxy-14-hydroxy-3,7,15-trimethyl-2,6,10,15-hexadeca tetraenyl]-4,5-dihydroxy benzoic acid, along with six known compounds, were isolated from the leaves of *Piper heterophyllum* and *P. aduncum*. The compounds have been tested against three strains of *Leishmania* spp., *Trypanosoma cruzi* and *Plasmodium falciparum*.

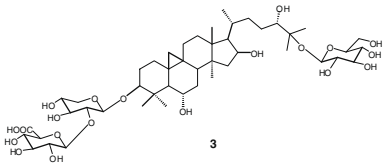


CHEMISTRY

Cycloartane-type glycosides from *Astragalus amblolepis* **pp 628–634**

Emre Polat, Ozgen Caliskan-Alankus*, Angela Perrone, Sonia Piacente, Erdal Bedir*

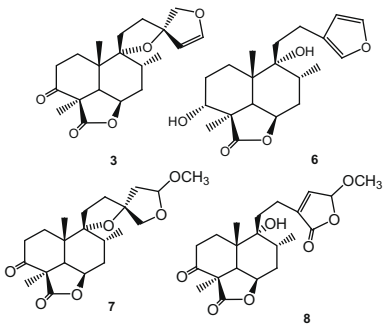
Five cycloartane-type glycosides, together with a known compound were isolated from the roots of *Astragalus amblolepis*. 3-*O*-[β-D-glucuronopyranosyl-(1 → 2)-β-D-xylopyranosyl]-25-*O*-β-D-glucopyranosyl-3β,6α,16β,24(*S*),25-pentahydroxy-cycloartane represents the first member of cycloartane-type glycosides possessing a glucuronic acid moiety.



Labdane diterpenes from *Marrubium thessalum* **pp 635–640**

Catherine Argyropoulou, Anastasia Karioti, Helen Skaltsa*

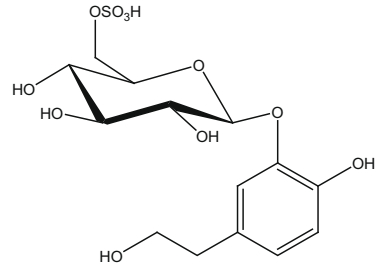
From the aerial parts of *Marrubium thessalum*, four labdane diterpenes, 13*S*-preperegrinine, 3α-hydroxymarrubiin, 9α,13*R*-15,16-bisepoxy-15β-methoxy-3-oxo-labdan-6β,19-olide and 15-methoxyvelutine C, have been isolated together with four known diterpenes and one flavone. The structures of the isolated compounds were established by means of NMR [^{1}H–^{1}H–COSY, ^{1}H–^{13}C–HSQC, HMBC, NOESY, and ROESY] and MS spectral analyses. Complete NMR assignments are reported for 13*R*-preperegrinine.



Phenolic compounds from *Bursera simaruba* Sarg. bark: Phytochemical investigation and quantitative analysis by tandem mass spectrometry **pp 641–649**

Mariateresa Maldini, Paola Montoro, Sonia Piacente, Cosimo Pizza*

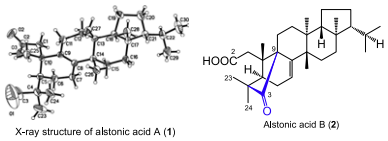
Phytochemical investigation of the methanolic extract of *Bursera simaruba* bark led to the isolation of 11 compounds, including lignans, phenolic compounds and three natural compounds namely 3,4-dimetoxyphenyl-1-*O*-β-D-(6-sulpho)-glucopyranoside, 3,4,5-trimetoxyphenyl 1-*O*-β-D-(6-sulpho)-glucopyranoside and 3,4-diidroxyphenylethanol-1-*O*-β-D-(6-sulpho)-glucopyranoside.



Alstonic acids A and B, unusual 2,3-secofernane triterpenoids from *Alstonia scholaris* **pp 650–654**

Fei Wang, Fu-Cai Ren, Ji-Kai Liu*

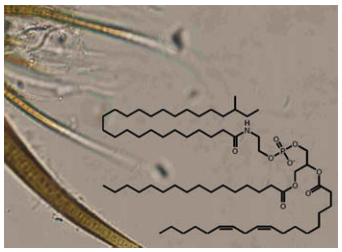
2,3-Secofernane triterpenoids, alstonic acids A (**1**) and B (**2**), were isolated from leaves of *Alstonia scholaris* together with an indole alkaloid, N^1-methoxymethyl picrinine. Their structures were established from MS and NMR spectroscopic analysis and confirmed by single crystal X-ray diffraction analysis.



Very-long-chain *iso* and *anteiso* branched fatty acids in *N*-acylphosphatidylethanolamines from a natural cyanobacterial mat of *Calothrix* sp. **pp 655–663**

Tomáš Řezanka*, Linda Nedbalová, Josef Elster, Tomáš Cajthaml, Karel Sigler

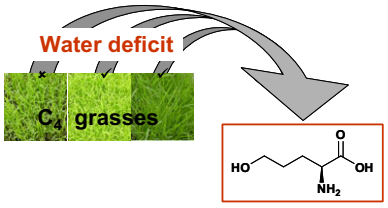
A combination of TLC, ESI–MS/MS and GC–MS was used to identify unusual molecular species of *N*-acylphosphatidylethanolamines containing very-long-chain *anteiso* branched fatty acids (VLCFAs) from *Calothrix* sp. collected in Antarctica and determine their component VLCFA up to 33-methyltetratriacontanoic acid as picolinyl ester derivatives using GC–MS.



Drought stress increases the production of 5-hydroxynorvaline in two C_4 grasses **pp 664–671**

Ana E. Carmo-Silva*, Alfred J. Keys, Michael H. Beale, Jane L. Ward, John M. Baker, Nathaniel D. Hawkins, Maria Celeste Arrabaça, Martin A.J. Parry

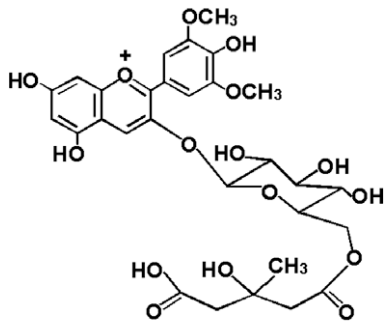
Metabolite profiling demonstrated the presence of 2-amino-5-hydroxypentanoic acid (5-hydroxynorvaline) in some C_4 grass leaves. The production of this unusual amino acid was enhanced in the dehydrated leaves of two drought tolerant species, suggesting a beneficial role for drought resistance.



An unusual acylated malvidin 3-glucoside from flowers of *Impatiens textori* Miq. (Balsaminaceae) **pp 672–674**

Fumi Tatsuzawa*, Norio Saito, Yuki Mikanagi, Koichi Shinoda, Kenjiro Toki, Atsushi Shigihara, Toshio Honda

An unusual acylated malvidin 3-glucoside was isolated from a purple flowers of *Impatiens textori* Miq. as a major anthocyanin component along with malvidin 3-(6-malonyl-glucoside). The structure of this pigment was elucidated to be malvidin 3-*O*-[6-*O*-(3-hydroxy-3-methyl-glutaryl)-β-glucopyranoside] by chemical and spectroscopic methods.

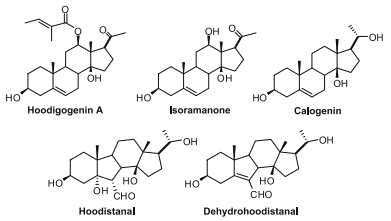


Malvidin 3-O-[6-O-(3-hydroxy-3-methylglutaroyl)-β-glucopyranoside] isolated from the flower of *Impatiens textori*.

Pregnane glycosides from *Hoodia gordonii* **pp 675–683**

Yatin J. Shukla, Rahul S. Pawar, Yuanqing Ding, Xing-Cong Li, Daneel Ferreira, Ikhlas A. Khan*

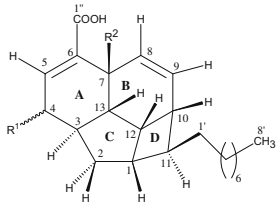
Pregnane glycosides (**1**, **2**, **5**–**9**) were isolated from the aerial parts of *Hoodia gordonii*. These constituents consisted of five pregnane derivatives namely hoodigogenin A, isoramanone, calogenin, and two unprecedented skeletons, hoodistanal and dehydrohoodistanal as the aglycones.



Antibacterial endiandric acid derivatives from *Beilschmiedia anacardioides* **pp 684–688**

Jean Rodolphe Chouna, Pepin Alango Nkeng-Efouet*, Bruno Ndjakou Lenta, Krishna Prasad Devkota, Beate Neumann, Hans-Georg Stammler, Samuel Fon Kimbu, Norbert Sewald

Three endiandric acid derivatives, beilschmiedic acids A, B and C were isolated from the stem bark of *Beilschmiedia anacardioides*. Their structures were established by stpectroscopic means. Beilschmiedic acid C showed strong antibacterial activity against *Bacillus subtilis* and *Micrococcus luteus* with MIC $\leqslant$ 5.60 μM for both strains.



1. R^1 = β-OH, R^2 = H
2. R^1 = β-OH, R^2 = OH
3. R^1 = α-OH, R^2 = H

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* Corresponding author

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