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UPDATE IN BIOINFORMATICS

PeroxiBase: The peroxidase database

pp 1605–1611

Filippo Passardi, Grégory Theiler, Marcel Zamocky, Claudia Cosio, Nicolas Rouhier, Marcia Margis-Pinheiros, Vassilios Ioannidis, Claude Penel, Laurent Falquet, Christophe Dunand*

The PeroxiBase database (<http://peroxibase.isb-sib.ch>) is now devoted to the haem and non-haem peroxidases. The members of this large group of protein are detected in all kingdoms and they all use various peroxides (ROOH) as the electron acceptor.



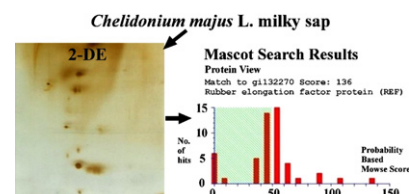
PROTEIN BIOCHEMISTRY

Proteomic analysis of *Chelidonium majus* milky sap using two-dimensional gel electrophoresis and tandem mass spectrometry

pp 1612–1622

Robert Nawrot*, Andrzej Kalinowski, Anna Gozdzicka-Jozefiak

Proteins from *Chelidonium majus* milky sap, which is plant of significant medicinal and pharmaceutical interest, were separated by 2-DE and identified using LC-ESI-MS/MS. Twenty-one proteins were identified. The majority of them could be linked to direct and indirect stress and defence reactions.

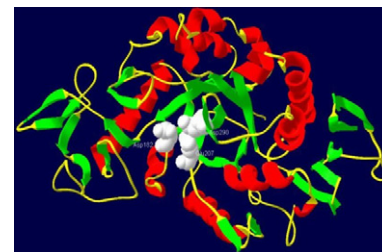


α -Amylase from mung beans (*Vigna radiata*) – Correlation of biochemical properties and tertiary structure by homology modelling

pp 1623–1631

Pallavi Tripathi, Leila Lo Leggio, Johanna Mansfeld, Renate Ulbrich-Hofmann, Arvind M. Kayastha*

α -Amylase from mung beans was purified to homogeneity by affinity chromatography. Purification was 600-fold and final specific activity achieved was 437 U/mg. Homology modelling studies with mung bean α -amylase were performed using barley α -amylases Amy 1 and Amy 2 as templates. The model showed a very similar structure as expected from the high sequence identity, except the absence of sugar and raw starch binding sites.



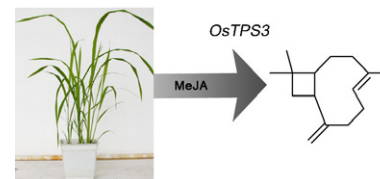
MOLECULAR GENETICS AND GENOMICS

The rice (*E*)- β -caryophyllene synthase (OsTPS3) accounts for the major inducible volatile sesquiterpenes

pp 1632–1641

Ai-Xia Cheng, Cai-Yu Xiang, Jian-Xu Li, Chang-Qing Yang, Wen-Li Hu, Ling-Jian Wang, Yong-Gen Lou, Xiao-Ya Chen*

The rice sesquiterpene synthase OsTPS3 catalyzes the formation of (*E*)- β -caryophyllene and several other sesquiterpenes, including β -elemene and α -humulene, which are components of inducible volatiles of rice plants. Methyl jasmonate (MeJA) promotes *OsTPS3* gene expression and (*E*)- β -caryophyllene production.



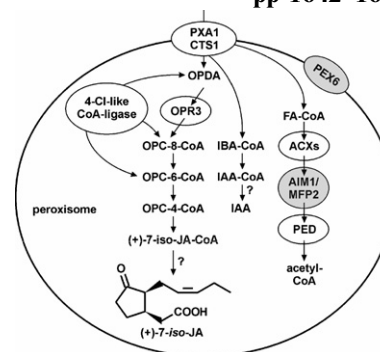
METABOLISM

Jasmonate biosynthesis in *Arabidopsis thaliana* requires peroxisomal β -oxidation enzymes – Additional proof by properties of *pex6* and *aim1*

pp 1642–1650

Carolyn Delker, Bethany K. Zolman, Otto Miersch, Claus Wasternack*

Using *aim1* and *pex6* mutants affected in fatty acid β -oxidation and peroxisome biogenesis, respectively, combined with feeding experiments of [$^2\text{H}_5$]-OPDA, additional evidence is given that the final steps in jasmonate synthesis are catalyzed by fatty acid β -oxidation enzymes.

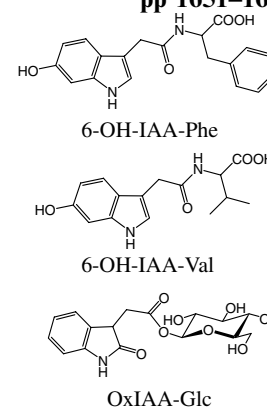


Three oxidative metabolites of indole-3-acetic acid from *Arabidopsis thaliana*

pp 1651–1663

Kenji Kai, Junko Horita, Kyo Wakasa, Hisashi Miyagawa*

Three oxidative metabolites of indole-3-acetic acid (IAA), 6-OH-IAA-Phe, 6-OH-IAA-Val, and OxIAA-Glc, were identified from the seedlings of *Arabidopsis* by LC-ESI-MS/MS-based analysis and chemical synthesis. Quantitative analysis demonstrated that the formation of OxIAA-Glc is a predominant metabolic pathway of IAA in *Arabidopsis*.

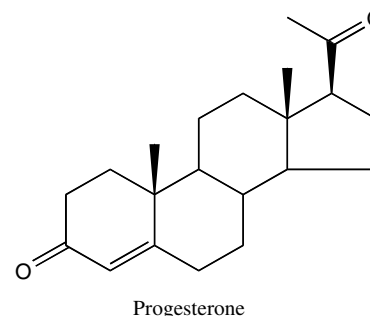


Progesterone: Its occurrence in plants and involvement in plant growth

pp 1664–1673

Mayumi Iino, Takahito Nomura, Yuji Tamaki, Yumiko Yamada, Koichi Yoneyama, Yasutomo Takeuchi, Masaki Mori, Tadao Asami, Takeshi Nakano, Takao Yokota*

Progesterone was identified from a variety of plants, while several genes encoding putative progesterone-binding proteins were found to be expressed in various tissues of *Arabidopsis thaliana* and rice. Furthermore, progesterone affected plant growth in some biological systems. These findings suggest that progesterone may be involved in plant growth.



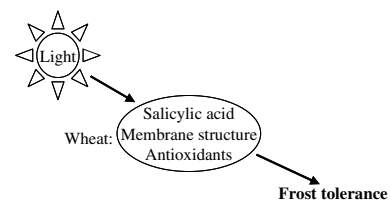
ECOLOGICAL BIOCHEMISTRY

Factors contributing to enhanced freezing tolerance in wheat during frost hardening in the light

pp 1674–1682

Tibor Janda*, Gabriella Szalai, Kornélia Leskó, Rusina Yordanova, Simona Apostol, Losanka Petrova Popova

The mechanism of the contribution of light during the development of freezing tolerance was investigated in winter wheat plants.



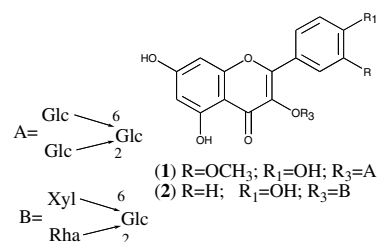
CHEMOTAXONOMY

Comparative phytochemical and morphological analyses of three Italian *Primula* species

pp 1683–1691

Gelsomina Fico*, Graziella Rodondi, Guido Flamini, Daniele Passarella, Franca Tomé

Vacuolar and epicuticular flavonoids were studied. Isorhamnetin 3-*O*-(2,6-di-*O*-β-D-glucopyranosyl-β-glucopyranoside) (**1**) and kaempferol 3-*O*-(2-*O*-α-L-rhamnopyranosyl-6-*O*-β-D-xylopyranosyl-β-D-glucopyranoside) (**2**) together with eight known flavonoids were isolated from *Primula auricula*, *Primula daonensis* and *Primula hirsuta*. Phytochemical results with size and dimensional ratio of the leaf trichomes were used to characterise *Primula species*.



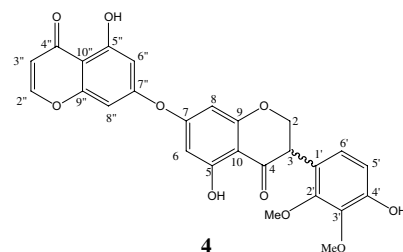
BIOACTIVE PRODUCTS

Isoflavanones from *Uraria picta* and their antimicrobial activity

pp 1692–1697

M. Mukhlesur Rahman, Simon Gibbons*, Alexander I. Gray

5,7-Dihydroxy-2'-methoxy-3',4'-methylenedioxyisoflavanone (**2**) and 4',5-dihydroxy-2',3'-dimethoxy-7-(5-hydroxyoxychromen-7yl)-isoflavanone (**4**) along with six known compounds including isoflavanones, triterpenes and steroids were isolated from the root of *Uraria picta*. The antimicrobial activities of these compounds were investigated.



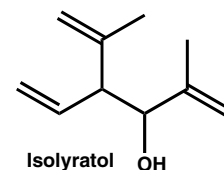
CHEMISTRY

Composition, irregular terpenoids, chemical variability and antibacterial activity of the essential oil from *Santolina corsica* Jordan et Fourr

pp 1698–1705

Kai Liu, Paul-Georges Rossi, Bernard Ferrari, Liliane Berti, Joseph Casanova, Félix Tomi*

The chemical composition of *Santolina corsica* essential oil was characterised by the occurrence of irregular monoterpene. The structure of three compounds, lyratyl butyrate, isolyratone and *epi*-isolyratol was elucidated. The essential oil was effective against *Staphylococcus aureus* and *C. jejuni*.

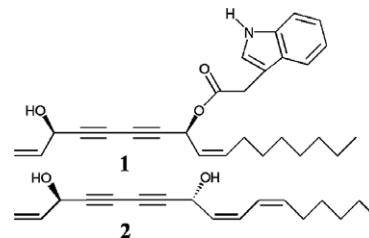


Growth inhibitory indole acetic acid polyacetylenic ester from Japanese ivy (*Hedera rhombea* Bean)

pp 1706–1711

Sayumi Yamazoe, Koji Hasegawa, Hideyuki Shigemori*

Two polyacetylenes (**1** and **2**) were isolated from flowers buds of *Hedera rhombea* Bean and compound **1** showed plant-growth inhibitory activity.

**OTHER CONTENTS****Announcement: Phytochemical Society of North America**

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