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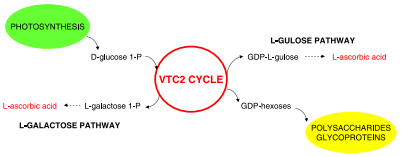
Contents

MOLECULES OF INTEREST

The VTC2 cycle and the *de novo* biosynthesis pathways for vitamin C in plants: An opinion pp 2602–2613

Beata A. Wolucka*, Marc Van Montagu

The extended VTC2 cycle is proposed that couples the de novo synthesis of vitamin C and the formation of GDP-sugars for polymers with the photosynthetic carbon flow and salvage pathways for the utilization of hexoses in plants.



PROTEIN BIOCHEMISTRY

Glutathione *S*-transferases in *Festuca arundinacea*: Identification, characterization and inducibility by safener benoxacor pp 2614–2624

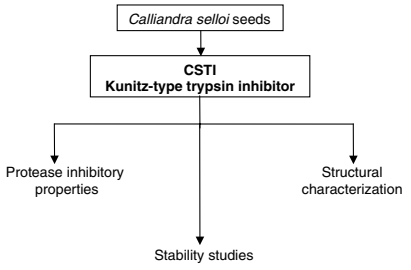
Daniele Del Buono, Luciano Scarponi*, Luca Espen

Shoots of *Festuca arundinacea* were submitted to a chromatographic procedure, by combination of anionic, affinity and RP-HPLC chromatography, to identify the glutathione *S*-transferase enzymes (GSTs). Four GST isoforms were identified: FaGST I, FaGST II, FaGST III and FaGST IV. Among these significant differences were observed in the chromatographic behaviours, structure, activity and responsiveness to the herbicide safener benoxacor.

***Calliandra selloi* Macbride trypsin inhibitor: Isolation, characterization, stability, spectroscopic analyses** pp 2625–2634

Lucila Yoshizaki, María F. Troncoso, Jose L.S. Lopes, Ulf Hellman, Leila M. Beltramini, Carlota Wolfenstein-Todel*

A Kunitz-type trypsin inhibitor was purified from *Calliandra selloi* seeds. Circular dichroism analyses, fluorescence and thermal denaturation studies demonstrated that the protein was rich in beta-sheet structure, highly stable over a wide range of pH and temperature, but labile to reduction and carbamidomethylation.

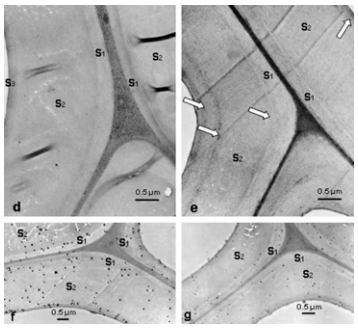


MOLECULAR GENETICS AND GENOMICS

Modification of hemicellulose content by antisense down-regulation of UDP-glucuronate decarboxylase in tobacco and its consequences for cellulose extractability pp 2635–2648

Laurence V. Bindschedler, Jutta Tuerck, Martin Maunders, Katia Ruel, Michel Petit-Conil, Saida Danoun, Alain-Michel Boudet, Jean-Paul Joseleau, G. Paul Bolwell*

Antisense expression of UDP-glucuronate decarboxylase in tobacco led to increased cellulose relative to xylan content in secondary cell walls. Although lignin proved to be less extractable, cellulose proved to be better protected during the kraft pulping process.



Cloning and characterization of isoprenyl diphosphate synthases with farnesyl diphosphate and geranylgeranyl diphosphate synthase activity from Norway spruce (*Picea abies*) and their relation to induced oleoresin formation pp 2649–2659

Axel Schmidt*, Jonathan Gershenzon

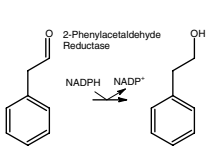
Three isoprenyldiphosphate synthases sequences, coding for a farnesyl diphosphate synthase (FPPS) and two geranylgeranyl diphosphate synthases (GGPPS) have been isolated and characterized from methyl jasmonate induced Picea abies saplings. Tissue-specific expression upon treatment with the stress hormone methyl jasmonate was shown.

METABOLISM

Tomato phenylacetaldehyde reductases catalyze the last step in the synthesis of the aroma volatile 2-phenylethanol pp 2660–2669

Denise M. Tieman, Holly M. Loucas, Joo Young Kim, David G. Clark, Harry J. Klee*

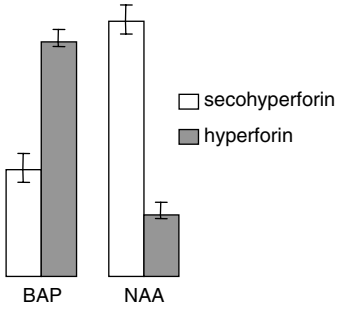
2-Phenylacetaldehyde and 2-phenylethanol are important contributors to tomato flavor and flower fragrance, particularly roses. Two tomato aldehyde reductases convert 2-phenylacetaldehyde to 2-phenylethanol *in vitro*. Wild type petunia plants have high levels of 2-phenylacetaldehyde and low levels of 2-phenylethanol. Transgenic petunia plants overexpressing one of these 2-phenylacetaldehyde reductases have high levels of phenylethanol and lower levels of 2-phenylacetaldehyde than wild type. This is an important step in determining the plant biochemical pathway to 2-phenylethanol.



Differential accumulation of hyperforin and secohyperforin in *Hypericum perforatum* tissue cultures pp 2670–2677

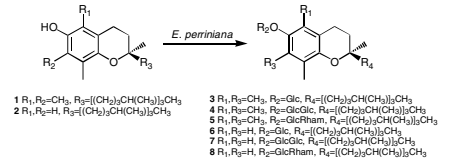
Armen Charchoglyan, Arusyak Abrahamyan, Isao Fujii, Zakia Boubakir, Tobias A.M. Gulder, Toni M. Kutchan, Hrachik Vardapetyan, Gerhard Bringmann, Yutaka Ebizuka, Ludger Beerhues*

The structure of secohyperforin was elucidated online by LC-DAD, -MS, and -NMR. The formation of secohyperforin and hyperforin was stimulated by the phytohormones NAA and BAP, respectively.



Glycosylation of tocopherols by cultured cells of *Eucalyptus perriniana* **pp 2678–2683**

Kei Shimoda, Yoko Kondo, Masaaki Akagi, Koichi Abe, Hatsuyuki Hamada, Hiroki Hamada*

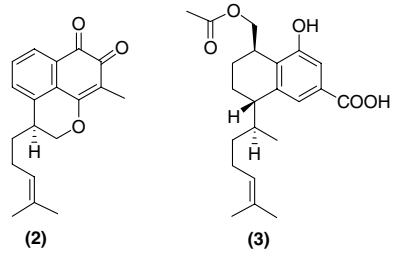


Cultured cells of *Eucalyptus perriniana* glycosylated α-tocopherol (**1**) and δ-tocopherol (**2**) to four disaccharides **4**, **5**, **7**, and **8** together with glucosides **3** and **6**.

BIOACTIVE PRODUCTS

Antimicrobial compounds from *Eremophila serrulata* **pp 2684–2690**

Chi P. Ndi*, Susan J. Semple, Hans J. Griesser, Simon M. Pyke, Mary D. Barton



An *o*-naphthoquinone, 9-methyl-3-(4-methyl-3-pentenyl)-2,3-dihydronaphtho[1,8-*bc*]pyran-7,8-dione (**2**), and a serrulatane diterpenoid, 20-acetoxy-8-hydroxyserrulat-14-en-19-oic acid (**3**) along with two known serrulatane-type diterpenoids were isolated from the leaves of *Eremophila serrulata*. All compounds possessed antimicrobial activity against Gram-positive bacteria with MICs ranging from 7.8 to 250 μg/mL.

OTHER CONTENTS

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* Corresponding author

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