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Special issue

Tannins and Related Polyphenols (Part 1)

Editors: Daneel Ferreira, Georg Gross, Herbert Kolodziej and Takashi Yoshida

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Editorial

pp 1969–1971

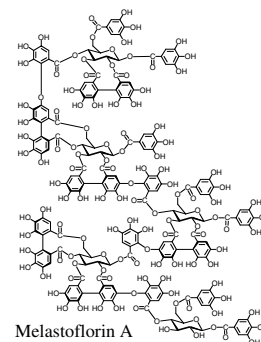
FULL PAPERS

Pentameric ellagitannin oligomers in melastomataceous plants—chemotaxonomic significance

pp 1972–1983

Takashi Yoshida\*, Hideyuki Ito, Isaza Jose Hipolito

An overview of the structural features of the oligomeric ellagitannins that are characteristic of melastomataceous plants, and the structures of newly isolated pentameric ellagitannins (melastoflorins A–D) from *Monochaetum multiflorum* are described.

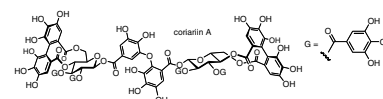


Recent progress in ellagitannin chemistry

pp 1984–2000

Ken S. Feldman\*

The synthesis of the tumoricidal dimeric ellagitannin, coriariin A, is described, along with related studies on the synthesis of a C(2)/C(4)-HHDP-containing model related to a putative geraniin biosynthesis precursor. The results of immunomodulatory assays with tannins and designed analogues attest to the promise that these species have in the distinct areas of tumor remission and anti-sepsis therapy.

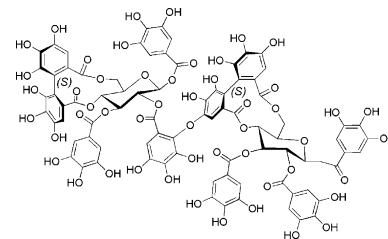


## Enzymology of gallotannin and ellagitannin biosynthesis

pp 2001–2011

Ruth Niemetz, Georg G. Gross\*

Enzyme studies on the pathways from gallic acid via 1,2,3,4,6-pentagalloyl- $\beta$ -D-glucose to complex gallotannins and monomeric and dimeric ellagitannins are reviewed.

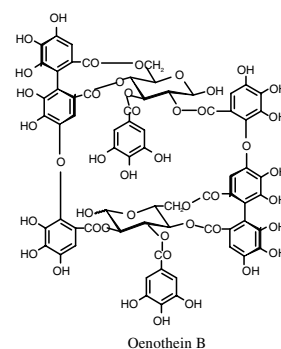


## Systematics and health effects of chemically distinct tannins in medicinal plants

pp 2012–2031

Takuo Okuda\*

Correlations of structural classifications of tannins with plant evolutionary systems, and health effects, e.g., inhibition of lipid-peroxidation, mutagenicity of carcinogens and tumor promotion, and also host-mediated antitumor activity and antiviral activity, of various tannins in medicinal plants are reviewed.

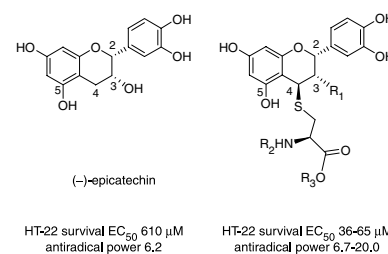


## Conjugation of catechins with cysteine generates antioxidant compounds with enhanced neuroprotective activity

pp 2032–2037

J.L. Torres\*, C. Lozano, P. Maher

Cysteine derivatives of epicatechin protected neural cells from glutamate-mediated programmed cell death mainly by maintaining the glutathione levels.

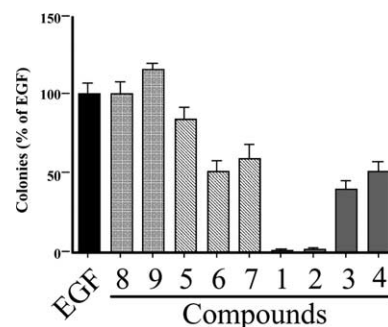


## Inhibition of epidermal growth factor-induced cell transformation by tannins

pp 2038–2046

Masaaki Nomura, Hirotaka Tsukada, Daisuke Ichimatsu, Hideyuki Ito, Takashi Yoshida, Ken-Ichi Miyamoto\*

Some ellagitannins and chromone gallates blocked epidermal growth factor-induced cell transformation in a promotion sensitive JB6 Cl 41 cell line.

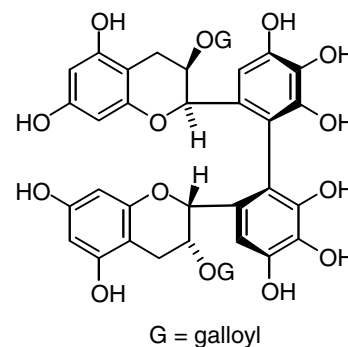


### Effects of tannins and related polyphenols on methicillin-resistant *Staphylococcus aureus*

pp 2047–2055

Tsutomu Hatano\*, Miwako Kusuda, Kazutoshi Inada, Tomo-omi Ogawa, Sumiko Shiota, Tomofusa Tsuchiya, Takashi Yoshida

Polyphenolic compounds that showed antibacterial effects and suppressed antibiotic resistance were reviewed.

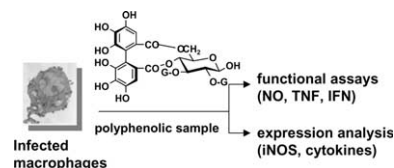


### Antileishmanial activity and immune modulatory effects of tannins and related compounds on *Leishmania* parasitised RAW 264.7 cells

pp 2056–2071

Herbert Kolodziej\*, Albrecht F. Kiderlen

The antileishmanial and immunomodulatory potencies of a total of 67 tannins and related compounds were evaluated. Their effects on macrophage functions were assessed for release of NO, TNF and IFN-like activities and by expression analysis (iNOS, IFN- $\alpha$ , IFN- $\gamma$ , TNF- $\alpha$ , IL-1, IL-10, IL-12, IL-18).

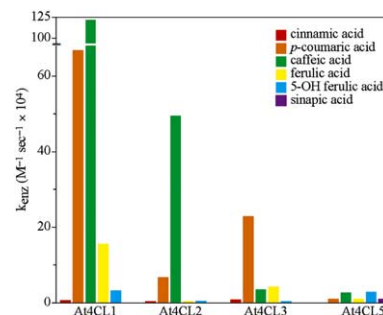


### Characterization in vitro and in vivo of the putative multigene 4-coumarate: CoA ligase network in *Arabidopsis*: syringyl lignin and sinapate/sinapyl alcohol derivative formation

pp 2072–2091

Michael A. Costa, Diana L. Bedgar, Syed G.A. Moinuddin, Kye-Won Kim, Claudia L. Cardenas, Fiona C. Cochrane, Jay M. Shockey, Gregory L. Helms, Yoshiaki Amakura, Hironobu Takahashi, Jessica K. Milhollan, Laurence B. Davin, John Browse, Norman G. Lewis\*

Detailed characterization of all bona fide *At4CL* genes, and their corresponding recombinant proteins, together with that of an *At4CL5* gene knockout, revealed that formation of syringyl lignin and sinapate ester does not occur via direct ligation of sinapic acid.

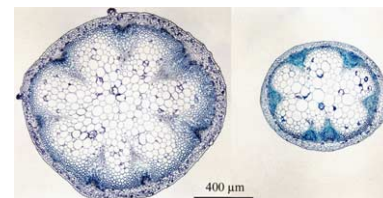


### Reassessment of effects on lignification and vascular development in the *irx4* *Arabidopsis* mutant

pp 2092–2107

Ann M. Patten, Claudia L. Cardenas, Fiona C. Cochrane, Dhrubojyoti D. Laskar, Diana L. Bedgar, Laurence B. Davin, Norman G. Lewis\*

Analysis of *Arabidopsis* wild-type and *irx4* mutant lines at various stages during growth and development revealed levels of lignin reduction in the mutant result from arrested/delayed development, presumably affected by modulation of CoASH metabolism. No evidence of any type for so-called abnormal lignification was obtained; instead, the deposition of lignin at all stages was predictably ordered.



## Molecular requirements of lignin–carbohydrate complexes for expression of unique biological activities

pp 2108–2120

Hiroshi Sakagami\*, Ken Hashimoto, Fumika Suzuki, Takako Ogiwara, Kazue Satoh, Hideyuki Ito, Tsutomu Hatano, Yoshida Takashi, Sei-ichiro Fujisawa

Lignin–carbohydrate complexes from pine cones of *Pinus parviflora* Sieb. et Zucc, together with their partial digestion products, as well as phenylpropanoid monomers and polymers, were compared to identify the molecular requirements for expression of diverse biological activities.

Comparison of biological activities between lignin-carbohydrate complexes and tannin			
	Anti-viral activity	Effect on VC	Macrophage activation
Lignin-carbohydrate complex (LCC)	potent	stimulatory	potent
LCC treated with acid	potent		
LCC treated with NaClO <sub>2</sub>	weak		
Phenylpropanoid polymer	potent		
Phenylpropanoid monomer	weak		
Tannin	weak	inhibitory	weak
Gallic acid	weak	inhibitory	weak

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Author Index

Guide for Authors

\* Corresponding author

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