

CONTENTS OF VOLUME 42

Number 1

Announcement

ix

Growth and Metabolism

Proton pump activation and growth promotion by cinchomeric acid in radish

1 H. NISHITANI, K. NISHITSUJI,
K. OKUMURA and H. TAGUCHI

Synthesis of glucosyl conjugates of [17-²H₂]-labelled and unlabelled gibberellin A₃₄

7 P. FUCHS and G. SCHNEIDER

Evidence for a cytosolic NADP-malic enzyme in tomato

11 M. KNEE, F. L. FINGER and
L. M. LAGRIMINI

Purification of phenylalanine ammonia lyase from *Rhodotorula glutinis*

17 G. B. D'CUNHA, V. SATYANARAYAN
and P. M. NAIR

Phosphatidylserine-sensitive calcium dependent protein kinase in rice embryo

21 S. KOMATSU, H. KARIBE, B.-S. XIA
and H. HIRANO

Changes in epicuticular waxes on wildtype and *Eceriferum* mutants in *Arabidopsis* during development

29 M. A. JENKS, H. A. TUTTLE and
K. A. FELDMANN

Alkaloid content in *Erythroxylum coca* tissue during reproductive development

35 E. L. JOHNSON

Ecological Biochemistry

Effect of salinity on lipid composition of *Cladophora vagabunda*

39 I. ELENKOV, K. STEFANOV,
S. DIMITROVA-KONAKLIEVA and
S. POPOV

Presence of cardenolides and ursolic acid from oleander leaves in larvae and frass of *Daphnis nerii*

45 F. ABE, T. YAMAUCHI and
K. MINATO

Biosynthesis

Special Publication: Evidence for a non-ACC ethylene biosynthesis pathway in lower plants

51 D. J. OSBORNE, J. WALTERS,
B. V. MILBORROW, A. NORVILLE and
L. M. C. STANGE

2-Amino-4-carboxypyrimidine in seeds of *Lathyrus tingitanus*

61 E. G. BROWN

Accumulation of vicine and convicine in *Vicia faba* and *V. narbonensis*

63 G. RAMSAY and D. W. GRIFFITHS

Cell Culture and Biotechnology

Polyacetylenes in hairy roots of *Platycodon grandiflorum*

69 JUN CHEUL AHN, BAIK HWANG,
H. TADA, K. ISHIMARU, K. SASAKI
and K. SHIMOMURA

C-14 Oxygenated taxanes from *Taxus yunnanensis* cell cultures

73 KEDI CHENG, WEISHUO FANG,
YUJUN YANG, HONG XU,
CHAO MENG, MAN KONG, WENYI HE
and QICHENG FANG

Altersolanol-related compounds from the culture liquid of *Alternaria solani*

77 N. OKAMURA, K. MIMURA,
H. HARAGUCHI, K. SHINGU,
K. MIYAHARA and A. YAGI

4'-O- β -D-Glucosyl-*cis-p*-coumaric acid—a natural constituent of *Sphagnum fallax* cultivated in bioreactors

81 S. RASMUSSEN, C. WOLFF and
H. RUDOLPH

ChemotaxonomyIridoids from endemic Sardinian *Linaria* speciesSesqui- and di-terpenoids from the liverwort *Jungermannia vulcanicola*Anthocyanins in Chilean species of *Alstroemeria*Isoscutellarein 7-glucosyl(1→2)xyloside from sixteen species of *Sideritis***Biosynthesis**Annosenegalin and annogalene: two cytotoxic mono-tetrahydrofuran acetogenins from *Annona senegalensis* and *Annona cherimolia*Proanthocyanidin polymers with antiseecretory activity and proanthocyanidin oligomers from *Guazuma ulmifolia* barkFlavonoids, cinnamic acids and coumarins from the different tissues and medicinal preparations of *Taraxacum officinale***Plant Chemistry**Podacycline A and B, two cyclic peptides in the latex of *Jatropha podagrica*A 2,5-dimethoxytetrahydrofuran from *Hemerocallis fulva* var. *kwanso*Iridoids and flavones from *Gentiana depressa*An abietane diterpene and two phenolics from *Salvia forskahlei*Labdane diterpenes from *Alpinia zerumbet*Furanoid diterpene glucosides from *Tinospora rumphii*Sesquiterpene alcohols from *Chamaecyparis obtusa* leaf oilAryl and triterpenic glycosides from *Margyricarpus setosus*Lycopersides A–C, three stereoisomeric 23-acetoxyspirosolan-3 β -ol β -lycotetraosides from *Lycopersicon esculentum*A 10-phenyl-[11]-cytochalasan from a species of *Daldinia*Elucidation of the substitution pattern of 9,10-anthraquinones through the chemical shifts of *peri*-hydroxyl protonsMore phloroglucinols from *Hypericum brasiliense*89 A. BIANCO, M. GUISO, M. MARTINO,
M. NICOLETTI, M. SERAFINI,
L. TOMASSINI, L. MOSSA and F. POLI93 F. NAGASHIMA, H. TANAKA and
Y. ASAKAWA97 R. NØRBAEK, L. P. CHRISTENSEN,
G. BOJESSEN and K. BRANDT101 O. M. PALOMINO, M. SÖLLHUBER,
E. CARRETERO and A. VILLAR103 S. SAHPAZ, M. C. GONZÁLEZ,
R. HOCQUEMILLER,
M. C. ZAFRA-POLO and D. CORTES109 M. HÖR, M. HEINRICH and
H. RIMPLER121 C. A. WILLIAMS, F. GOLDSTONE and
J. GREENHAM129 A. J. J. VAN DEN BERG,
S. F. A. J. HORSTEN,
J. J. KETTENES-VAN DEN BOSCH,
C. J. BEUKELMAN, B. H. KROES,
B. R. LEEFLANG and R. P. LABADIE135 T. KONISHI, T. INOUE, S. KIYOSAWA
and Y. FUJIWARA139 A. J. CHULIA, J. VERCAUTEREN and
A. M. MARIOTTE145 A. ULUBELEN, U. SÖNMEZ, G. TOPCU
and C. B. JOHANSSON149 HONG-XI XU, HUI DONG and
KENG-YEOW SIM153 T. S. MARTIN, K. OHTANI, R. KASAI
and K. YAMASAKI159 T. HIEDA, M. TAZAKI, Y. MORISHITA,
T. AOKI and S. NAGAHAMA163 N. DE TOMMASI, L. RASTRELLI,
J. CUMANDA, G. SPERANZA and
C. PIZZA

169 S. YAHARA, N. UDA and T. NOHARA

173 M. S. BUCHANAN, T. HASHIMOTO,
S. TAKAOKA, Y. KAN and
Y. ASAKAWA

177 J. SCHRIPSEMA and D. DAGNINO

185 L. ROCHA, A. MARSTON,
O. POTTERAT, M. A. C. KAPLAN and
K. HOSTETTMANN

1,3-Di- <i>O</i> -galloylquinic acid from <i>Guiera senegalensis</i>	189	N. BOUCHET, J. LEVESQUE, A. BLOND, B. BODO and J.-L. POUSSET
Galloylhamameloses and proanthocyanidins from <i>Hamamelis virginiana</i>	191	C. HARTISCH and H. KOLODZIEJ
Triacylated anthocyanins from <i>Ajuga reptans</i> flowers and cell cultures	199	N. TERAHARA, A. CALLEBAUT, R. OHBA, T. NAGATA, M. OHNISHI- KAMEYAMA and M. SUZUKI
HPLC and GC-MS identification of the major organic constituents in New Zealand propolis	205	K. R. MARKHAM, K. A. MITCHELL, A. L. WILKINS, J. A. DALDY and Y. LU
Anhydroicaritin 3- <i>O</i> -rhamnosyl(1→2)rhamnoside from <i>Epimedium koreanum</i> and a reappraisal of other rhamnosyl(1→2, 1→3 and 1→4)rhamnoside structures	213	WEN-KUI LI, JING-QI PAN, MU-JIAN LÜ, PEI-GEN XIAO and RU-YI ZHANG
Alkaloids from root bark of <i>Zanthoxylum simulans</i>	217	IH-SHENG CHEN, SHWU-JEN WU, YANN-LII LEU, INN-WHA TSAI and TIAN-SHUNG WU
Buntanbismine, a bisacridone alkaloid from <i>Citrus grandis</i> f. <i>buntan</i>	221	TIAN-SHUNG WU, SHIOW-CHYN HUANG and PEI-LIN WU
Pyrrolizidine and tetrahydroisoquinoline alkaloids from <i>Echium humile</i>	225	A. EL-SHAZLY, T. SARG, A. ATEYA, E. ABDEL AZIZ, S. EL-DAHMY, L. WITTE and M. WINK
Ergoladinine, an ergot alkaloid	231	L. CVAK, J. MINÁŘ, S. PAKHOMOVA, J. ONDŘÁČEK, B. KRATOCHVÍL, P. SEDMERA, V. HAVLÍČEK and A. JEGOROV
Acridone alkaloids from <i>Bosistoa transversa</i>	235	A. A. AUZI, T. G. HARTLEY, R. D. WAIGH and P. G. WATERMAN
Short Reports		
An iridoid glucoside from <i>Dipsacus asperoides</i>	239	H. TOMITA and Y. MOURI
<i>Trans</i> -methyl cinnamate: the major volatile from some populations of the liverwort, <i>Conocephalum conicum</i>	241	W. F. WOOD, W. C. LANCASTER, C. O. FISHER and R. E. STOTLER
Puetuberosanol, an epoxychalcanol from <i>Pueraria tuberosa</i>	243	R. A. KHAN, P. K. AGRAWAL and R. S. KAPIL
Two furanoxanthones from <i>Mammea acuminata</i>	245	M. INUMA, H. TOSA, T. TANAKA and S. RISWAN
Xanthones from root bark of <i>Calophyllum thwaitesii</i>	249	H. R. W. DHARMARATNE and W. M. A. P. WANIGASEKERA
Book Review	251	

Number 2

Announcements

ix

Review Article Number 112

Acetogenins from Annonaceae, inhibitors of mitochondrial complex I

253	M. C. ZAFRA-POLO, M. C. GONZÁLEZ, E. ESTORNELL, S. SAHBAZ and D. CORTES
-----	---

Growth and Metabolism

A new auxin-inhibiting substance, 4-Cl-6,7-dimethoxy-2-benzoxazolinone, from light-grown maize shoots

273	T. ANAI, H. AIZAWA, N. OHTAKE, S. KOSEMURA, S. YAMAMURA and K. HASEGAWA
-----	---

Bromoperoxidase in <i>Corallina pilulifera</i> is regulated by its vanadate content	277	N. ITOH, H. SASAKI, N. OHSAWA, M. S. SHIBATA and J. MIURA
Inhibition of both peroxidase and laccase by desferal (desferrioxamine mesylate)	283	M. C. DE PINTO and A. R. BARCELÓ
Carbohydrate moieties of three radish peroxidases	287	SUN HYUNG KIM and SOUNG SOO KIM
Purification and characterization of diamine oxidase from <i>Triticum aestivum</i> shoots	291	Y. SUZUKI
α -L-Arabinofuranosidase from cell walls of Japanese pear fruits	295	A. TATEISHI, Y. KANAYAMA and S. YAMAKI
Polymer mobility in cell walls of transgenic tomatoes with reduced polygalacturonase activity	301	K. M. FENWICK, M. C. JARVIS, D. C. APPERLEY, G. B. SEYMOUR and C. R. BIRD
M, 33 k oil body associated protein in cultured shoot primordia of <i>Matricaria chamomilla</i>	309	S. IZUMI, O. TAKASHIMA, N. FUKUDA and T. HIRATA
An acidic amino acid-specific protease from germinating soybeans	313	A. L. TAN-WILSON, X. LIU, R. CHEN, X. QI and K. A. WILSON
Effect of cucurbitacins on mRNA coding for laccase in <i>Botrytis cinerea</i>	321	L. GONEN, A. VITERBO, F. CANTONE, R. C. STAPLES and A. M. MAYER
Nicotine N-demethylase in cell-free preparations from tobacco cell cultures	325	D. HAO and M. M. YEOMAN
Putrescine accumulation in wounded green banana fruit	331	K.-I. YOZA, Y. TAKEDA, K. SEKIYA, Y. NOGATA and H. OHTA
Changes in lipid composition during floral development of <i>Brassica campestris</i>	335	D. H. HOBBS, J. H. HUME, C. E. ROLPH and D. T. COOKE
Lipid composition of symbiosomes from pea root nodules	341	L. E. HERNÁNDEZ and D. T. COOKE
Photodegradation of chlorophyll phytyl chain in senescent leaves of higher plants	347	J.-F. RONTANI, P. CUNY and V. GROSSI
Possible mechanisms controlling molecular weight of rubbers in <i>Hevea brasiliensis</i>	353	J. TANGPAKDEE, Y. TANAKA, R. WITTISUWANNAKUL and N. CHAREONTHIPHAKORN
Phenolic derivatives related to lignin metabolism as substrates for <i>Azospirillum</i> laccase activity	357	D. FAURE, M. L. BOUILLANT, C. JACOUD and R. BALLY
The effect of induced polyploidy on the flavonols of <i>Petunia</i> 'Mitchell'	361	R. J. GRIESBACH and K. K. KAMO
Ecological Biochemistry		
Plant growth promoting and fungicidal 4-quinolinones from <i>Pseudomonas cepacia</i>	365	SURK-SIK MOON, PYENG MO KANG, KYUNG SEOK PARK and CHOONG HOE KIM
1,8-Cineole: an attractant for the banana weevil, <i>Cosmopolites sordidus</i>	369	I. O. NDIEGE, W. J. BUDENBERG, D. O. OTIENO and A. HASSANALI
Volatiles emitted by apple fruitlets infested by larvae of the European apple sawfly	373	J.-L. BOEVÉ, U. LENGWILER, L. TOLLSTEN, S. DORN and T. C. J. TURLINGS
The phytotoxic activity of some metabolites of <i>Botrytis cinerea</i>	383	L. REBORDINOS, J. M. CANTORAL, M. V. PRIETO, J. R. HANSON and I. G. COLLADO
Changes in the accumulation of soluble and cell wall-bound phenolics in elicitor-treated cell suspension cultures and fungus-infected leaves of <i>Solanum tuberosum</i>	389	H. KELLER, H. HOHLFELD, V. WRAY, K. HAHLBROCK, D. SCHEEL and D. STRACK

Biosynthesis

S-Adenosyl-L-methionine: anol-O-methyltransferase activity in organ cultures of *Pimpinella anisum*

Properties and partial purification of squalene synthase from cultured cells of dandelion

The hydroxylation of testosterone and some relatives by *Cephalosporium aphidicola*

Signalling molecules and the synthesis of alkaloids in *Catharanthus roseus* seedlings

Cell Culture and Biotechnology

Synthesis of optically active α -phenylpyridylmethanols by immobilized cell cultures of *Catharanthus roseus*

Phaeophytins from a cell suspension culture of the liverwort *Plagiochila ovalifolia*

Rosmarinic acid and related phenolics in hairy root cultures of *Ocimum basilicum*

Prenylated xanthenes from cell suspension cultures of *Hypericum patulum*

Plant Chemistry

A cyclic heptapeptide from *Vaccaria segetalis*

Nonprotein amino acids from seeds of *Cycas circinalis* and *Phaseolus vulgaris*

Diacylglycerylgalactosides from *Arisaema amurense*

The glycosidic precursor of (Z)-5-ethylidene-2(5H)-furanone in *Halocarpus biformis* juvenile foliage

Sesquiterpene hydrocarbons in the essential oil of *Meum athamanticum*

Pinguicoline derivatives from an axenic culture of the liverwort *Aneura pinguis*

Eudesmanolides from *Artemisia pontica*

Aleppicatines A and B from *Euphorbia aleppica*

Kauranes and related diterpenes and *Adenostemma brasilianum*

Buddlejone, a diterpene from *Buddleja albiflora*

An unusual cycloartane triterpenoid from *Cimicifuga foetida*

397 B. KEMMERER and J. REICHLING

405 H. KOMINE, T. TAKAHASHI and S. AYABE

411 J. R. HANSON, H. NASIR and A. PARVEZ

417 R. J. AERTS, A. SCHÄFER, M. HESSE, T. W. BAUMANN and A. SLUSARENKO

423 M. TAKEMOTO, K. ACHIWA, N. STOYNOV, D. CHEN and J. P. KUTNEY

427 A. MATSUO, K. ONO, K. HAMASAKI and H. NOZAKI

431 H. TADA, Y. MURAKAMI, T. OMOTO, K. SHIMOMURA and K. ISHIMARU

435 K. ISHIGURO, H. FUKUMOTO, A. SUITANI, M. NAKAJIMA and K. ISOI

439 H. MORITA, Y. S. YUN, K. TAKEYA, H. ITOKAWA and O. SHIROTA

443 CONG-JUN LI, D. M. BROWNSON, T. J. MABRY, C. PERERA and E. A. BELL

447 JEE H. JUNG, HONGKUM LEE and SAM SIK KANG

453 N. B. PERRY, M. H. BENN, L. M. FOSTER, A. ROUTLEDGE and R. T. WEAVERS

461 W. A. KÖNIG, A. RIECK, Y. SARITAS, I. H. HARDT and K.-H. KUBECZKA

465 H. TAZAKI, H. SOUTOME, K. NABETA, H. OKUYAMA and H. BECKER

469 A. B. TRENDAFILOVA, M. N. TODOROVA and C. V. GUSSEV

473 S. ÖKSÜZ, F. GÜREK, L.-Z. LIN, R. R. GIL, J. M. PEZZUTO and G. A. CORDELL

479 A. BARDÓN, S. MONTANARO, C. A. N. CATALÁN, J. G. DÍAZ and W. HERZ

485 P. J. HOUGHTON, T. Z. WOLDEMARIAM, M. CANDAU, A. BARNARDO, O. KHEN-ALAFUN and L. SHANGXIAO

489 CONG-JUN LI, YING-HE LI, PEI-GEN XIAO, T. J. MABRY, W. H. WATSON and M. KRAWIEC

Triterpenes and triterpene glycosides from <i>Paradrymonia macrophylla</i>	495	C. TERREAUX, M. P. MAILLARD, M. P. GUPTA and K. HOSTETTMANN
Triterpenes and 1-(ω -hydroxyceraty)glycerols from <i>Pentaclethra eetveldeana</i> root bark	501	BABADY-BYLA and W. HERZ
Unsaturated E-ring triterpenes from <i>Rubus pinfaensis</i>	505	D. G. DURHAM, I. X. LIU and R. M. E. RICHARDS
2-Deoxybrassinolide, a brassinosteroid from <i>Pisum sativum</i> seed	509	T. YOKOTA, T. MATSUOKA, T. KOARAI and M. NAKAYAMA
Bufadienolides from <i>Urginea maritima</i> from Egypt	513	B. KOPP, L. KRENN, M. DRAXLER, A. HOYER, R. TERKOLA, P. VALLASTER and W. ROBIEN
Re-investigation of the cardenolide glycosides from <i>Gomphocarpus sinaicus</i>	523	N. S. ABDEL-AZIM, F. M. HAMMOUDA, D. HUNKLER and H. RIMPLER
(-)-Magnofargesin and (+)-magnoliadiol, two lignans from <i>Magnolia fargesii</i>	531	M. MIYAZAWA, H. KASAHARA and H. KAMEOKA
Isoquinoline alkaloid <i>N</i> -oxides from <i>Thalictrum simplex</i>	535	M. P. VELCHEVA, R. R. PETROVA, Z. SAMDANGHIIN, S. DANGHAAGHIIN, Z. YANSANGHIIN, H. BUDZIKIEWICZ and M. HESSE
Three aspidofractinine-type alkaloids from <i>Kopsia teoi</i>	539	T.-S. KAM and K. YOGANATHAN
Two steroidal glycoalkaloids from <i>Solanum arboreum</i>	543	A. MAXWELL, R. PINGAL, W. F. REYNOLDS and S. MCLEAN
Short Reports		
A pyridine-derivative from the mushroom <i>Albatrellus confluens</i>	547	H. KAWAGISHI, A. TANAKA, K. SUGIYAMA, H. MORI, H. SAKAMOTO, Y. ISHIGURO, K. KOBAYASHI and M. URAMATO
Parishins B and C from rhizomes of <i>Gastrodia elata</i>	549	JER-HUEI LIN, YI-CHU LIU, JING-PING HAU and KUO-CHING WEN
A secoiridoid glucoside from <i>Jasminum odoratissimum</i>	553	J. M. TRUJILLO, J. M. HERNÁNDEZ, J. A. PÉREZ, H. LÓPEZ and I. FRÍAS
Neo-clerodane diterpenoids from <i>Scutellaria cypria</i>	555	M. BRUNO, C. FAZIO and N. A. ARNOLD
20-Epibryonolic acid, phytosterols and ellagic acid from <i>Coriaria intermedia</i>	559	YUAN-SHIUN CHANG, MING-SHIUNG LIN, REUY-LING JIANG, SHUN-CHUEH HUANG and LI-KANG HO
11-Epi-azadirachtin H from <i>Azadirachta indica</i>	561	N. RAMJI, K. VENKATAKRISHNAN and K. M. MADYASTHA
Purpurazolol, a highly oxygenated coumarin from <i>Pterocaulon purpurascens</i>	563	S. L. DEBENEDETTI, E. L. NADINIC, M. A. GOMEZ, J. D. COUSSIO, N. DE KIMPE and M. BOEYKENS
Mauritine J, a cyclopeptide alkaloid from <i>Zizyphus mauritiana</i>	565	A. JOSSANG, A. ZAHIR and D. DIAKITE
Diterpenoid alkaloids from <i>Delphinium caeruleum</i>	569	YAN WANG, SHAO NONG CHEN, YUANJIANG PAN, JIANGMING ZHANG and YAOZU CHEN
Book Review	573	

Number 3

Growth and Metabolism

- Metabolism and biological activity of (+)- and (-)-C-1'-O-methyl ABA in maize suspension-cell cultures 575 P. A. ROSE, A. J. CUTLER, M. K. LOEWEN, L. R. HOGGE and S. R. ABRAMS
- Lactate dehydrogenase in plants: distribution and function 581 P. O'CARRA and P. MULCAHY
- Chloroplast adenylate kinase from tobacco. Purification and partial characterization 589 U. SCHLATTNER, E. WAGNER, H. GREPPIN and M. BONZON
- Calcium ions promote the response of *Citrus limon* against fungal elicitors or wounding 595 P. CASTAÑEDA and L. M. PÉREZ
- Inhibition of cyclic AMP-dependent protein kinase by curcumin 599 M. HASMEDA and G. M. POLYA
- Unconjugated Man₅GlcNAc occurs in vegetative tissues of tomato 607 H. YUNOVITZ, J. N. LIVSEY and K. C. GROSS
- Pectic polysaccharides from xylem-differentiating zone of *Cryptomeria japonica* 611 Y. EDASHIGE and T. ISHII
- Vitamin D₃ and its metabolites in the tomato plant 617 T. P. PREMA and N. RAGHURAMULU
- Fatty acid distribution in triacylglycerols from aril and cotyledon oils of *Azelia cuanzenensis* 621 G. VLAHOV
- Cerebrosides in mature-green and red-ripe bell pepper and tomato fruits 627 B. D. WHITAKER
- Ecological Biochemistry**
- A cyanogenic glycoside from *Canthium schimperianum* 633 B. SCHWARZ, V. WRAY and P. PROKSCH
- Nonsterol related resistance in *Ustilago maydis* to the polyene antifungals, amphotericin B and nystatin 637 T. JOSEPH-HORNE, N. MANNING, D. HOLOMAN and S. KELLY
- Toxicity of 6-methoxymellein and 6-hydroxymellein to the producing carrot cells 641 F. MARINELLI, U. ZANELLI and V. N. RONCHI
- Effect of gliotoxin on growth and branched-chain amino acid biosynthesis in plants 645 H. HARAGUCHI, Y. HAMATANI, M. HAMADA and A. FUJII-TACHINO
- Biosynthesis of cyanohydrin glucosides from unnatural nitriles in intact tissue of *Passiflora morifolia* and *Turnera angustifolia* 649 J. W. JAROSZEWSKI, A. B. RASMUSSEN, H. B. RASMUSSEN, C. E. OLSEN and L. B. JØRGENSEN
- Effect of growth conditions on endo- and exopolymer biosynthesis in *Anabaena cylindrica* 10 C 655 L. LAMA, B. NICOLAUS, V. CALANDRELLI, M. C. MANCA, I. ROMANO and A. GAMBACORTA
- Cyanidin 3-malonylglucoside and malonyl-coenzyme A: anthocyanidin malonyltransferase in *Lactuca sativa* leaves 661 M.-A. YAMAGUCHI, S. KAWANOBU, T. MAKI and I. INO
- Cell Culture and Biotechnology**
- UDP-glucuronic acid: triterpene glucuronosyltransferase activity in cultured licorice cells 665 H. HAYASHI, Y. NISHIYAMA, N. TOMIZAWA, N. HIRAOKA and Y. IKESHIRO
- Biotransformation of digitoxigenin by cultured ginseng cells 667 K. KAWAGUCHI, T. WATANABE, M. HIROTANI and T. FURUYA
- Acylated anthocyanins in red flowers of *Hyacinthus orientalis* regenerated *in vitro* 671 K. HOSOKAWA, Y. FUKUNAGA, E. FUKUSHI and J. KAWABATA
- Chemotaxonomy**
- Cell wall sugars of some *Scenedesmus* species 673 H. TAKEDA

- (-)-Ledol from the liverwort *Cephaloziella recurvifolia* and the clarification of its identity
- Sesquiterpene lactones and other constituents of *Stevia maimarensis* and *Synedrellopsis grisebachii*
- Biotransformations of progesterone by *Chlorella* spp.
- Minor lignans from *Haplophyllum cappadocicum*
- Lignans, alkaloids and coumarins from *Haplophyllum vulcanicum*
- Flavonoid variation in the leaves of *Glycyrrhiza glabra*
- Bioactive Plant Products**
- Araticulin, a bis-tetrahydrofuran polyketide from *Annona crassiflora* seeds
- Cytotoxic azadirachtin-type limonoids from *Melia azedarach*
- Antiviral activity of lignans and their glycosides from *Justicia procumbens*
- Plant Chemistry**
- 1 β -Amino-2 α ,3 β ,5 β -trihydroxycycloheptane from *Physalis alkekengi* var. *francheti*
- Glycosides of megastigmane and of the simple alcohols from *Alangium premmifolium*
- 15(R)-Hydroxylinoleic acid, an oxylipin from oat seeds
- Acetylenic thiophene derivatives from *Blumea obliqua*
- Bisabolenes from *Achillea cretica*
- Hydroperoxylated guaiane-type sesquiterpenes from *Viburnum awabuki*
- Eudesmane-type sesquiterpenes from *Tanacetum praeteritum* subsp. *praeteritum*
- Seco-eremophilane derivatives from rhizomes of *Petasites japonicus*
- A guaianolide from *Tanacetum argenteum* subsp. *flabellifolium*
- Isolation and structure of wightional and wightiolide from *Andrographis wightiana*
- Three isomeric diterpenes from *Vellozia flavicans*
- A tetranorfriedolabdane diterpene from *Vellozia stipitata*
- 677 CHIA-LI WU, YU-MING HUANG and JYH-RONG CHEN
- 681 L. R. HERNÁNDEZ, E. C. DE RISCALA, C. A. N. CATALÁN, J. G. DÍAZ and W. HERZ
- 685 A. POLLIO, G. PINTO, M. D. GRECA, A. FIORENTINO and L. PREVITERA
- 689 B. GÖZLER, T. GÖZLER, H. SAĞLAM and M. HESSE
- 695 B. GÖZLER, D. RENTSCH, T. GÖZLER, N. ÜNVER and M. HESSE
- 701 H. HAYASHI, M. YASUMA, N. HIRAOKA, Y. IKESHIRO, H. YAMAMOTO, E. YEŞİLADA, E. SEZİK, G. HONDA and M. TABATA
- 705 L. P. SANTOS, M. A. D. BOAVENTURA, N.-J. SUN, J. M. CASSADY and A. B. DE OLIVEIRA
- 709 K. TAKEYA, Z.-S. QIAO, C. HIROBE and H. ITOKAWA
- 713 J. ASANO, K. CHIBA, M. TADA and T. YOSHII
- 719 N. ASANO, A. KATO, H. KIZU and K. MATSUI
- 723 H. KIJIMA, H. OTSUKA, T. IDE, C. OGIMI, E. HIRATA, A. TAKUSHI and Y. TAKEDA
- 729 M. HAMBERG and G. HAMBERG
- 733 V. U. AHMAD and N. ALAM
- 737 M. BRUNO, M. L. BONDI, M. P. PATERNOSTRO, N. A. ARNOLD, J. G. DÍAZ and W. HERZ
- 741 Y. FUKUYAMA, H. MINAMI, R. ICHIKAWA, K. TAKEUCHI and M. KODAMA
- 747 N. GÖREN
- 751 Y. YAOITA and M. KIKUCHI
- 757 N. GÖREN, E. TAHTASAKAL, M. KRAWIEC and W. H. WATSON
- 761 B. S. JOSHI, V. R. HEGDE and V. N. KAMAT
- 767 Â. C. PINTO, C. M. REZENDE, O. A. C. ANTUNES and C. R. D. CORREIA
- 771 Â. C. PINTO, O. A. C. ANTUNES, M. G. PIZZOLATTI and V. M. RUMJANEK

- C-10 Oxygenated neo-clerodane diterpenes from *Teucrium sand-rasicum* 775 G. TOPCU, C. ERIŞ, C.-T. CHE and A. ULUBELEN
- Dehydroabietane diterpenes from *Juniperus formosana* Hay. var. *concolor* Hay. 779 YUEH-HSIUNG KUO and MING TSANG YU
- Kaurane glycosides from *Inula britannica* 783 YU SHAO, NAI-SHEN BAI and BING-NAN ZHOU
- A rearranged taxane from the Himalayan yew *Taxus wallichiana* 787 S. K. CHATTOPADHYAY, G. C. SAHA, R. P. SHARMA, S. KUMAR and R. ROY
- 20,29-Epoxydalacianone and 6 β -hydroxydalacianone, two lupane triterpenes from *Salacia beddomei* 789 A. HISHAM, G. J. KUMAR, Y. FUJIMOTO and N. HARA
- A cycloartane triterpenoid and ω -phenyl alkanolic and alkenolic acids from *Trichilia clausenii* 795 M. T. PUPO, P. C. VIEIRA, J. B. FERNANDES and M. F. G. F. DA SILVA
- Triterpenoids from *Pulsatilla chinensis* 799 WEN-CAI YE, NINE-NING JI, SHOU-XUN ZHAO, JING-HAN LIU, TAO YE, M. A. MCKERVEY and P. STEVENSON
- Acyclic triterpenoids from *Ekebergia capensis* 803 Y. NISHIYAMA, M. MORIYASU, M. ICHIMARU, Y. TACHIBANA, A. KATO, S. G. MATTHEGE, J. N. NGANGA and F. D. JUMA
- Triterpenoid glycosides from bark of *Meliosma lanceolata* 809 F. ABE, T. YAMAUCHI, H. SHIBUYA and I. KITAGAWA
- Dammarane-type triterpenoid saponins from *Bacopa monniera* 815 S. GARAI, S. B. MAHATO, K. OHTANI and K. YAMASAKI
- Saponins from *Clematis chinensis* 821 BAOPING SHAO, GUOWEI QIN, RENSHENG XU, HOUMING WU and KAN MA
- Saponins from *Mussaenda pubescens* 827 WEIMIN ZHAO, PING WANG, RENSHENG XU, GUOWEI QIN, SHAO KAI JIANG and HOUMING WU
- Rearranged limonoids from *Khaya senegalensis* 831 L. R. V. OLMO, M. F. G. F. DA SILVA, E. R. FO, P. C. VIEIRA, J. B. FERNANDES, A. J. MARSALOLI, A. L. PINHEIRO and E. F. VILELA
- Lasallic acid, a tridepside from the lichen, *Lasallia asiae-orientalis* 839 T. NARUI, S. TAKATSUKI, K. SAWADA, T. OKUYAMA, C. F. CULBERSON, W. L. CULBERSON and S. SHIBATA
- Three isocoumarins from *Coriandrum sativum* 843 M. TANIGUCHI, M. YANAI, Y. Q. XIAO, T. KIDO and K. BABA
- Three stilbenoids from the orchid *Agrostophyllum callosum* 847 P. L. MAJUMDER, S. BANERJEE and S. SEN
- Stilbenoids from *Pleione bulbocodioides* 853 L. BAI, M. YAMAKI and S. TAKAGI
- Prorobinetinidins from *Stryphnodendron adstringens* 857 J. PALAZZO DE MELLO, F. PETEREIT and A. NAHRSTEDT
- A malonylated anthocyanin and flavonols in the blue flowers of *Meconopsis* 863 K. TAKEDA, S. YAMAGUCHI, K. IWATA, Y. TSUJINO, T. FUJIMORI and S. Z. HUSAIN
- Flavonoid glycosides from *Colebrookea oppositifolia* 867 FAN YANG, XING-CONG LI, HAN-QING WANG and CHONG-REN YANG

- 1-*O*- β -D-Glucopyranosyl anthranilate from Piñuela (*Bromelia plumieri*) fruit 871 F. PARADA, D. KRAJEWSKI, C. DUQUE, E. JÄGER, M. HERDERICH and P. SCHREIER
- The characterization and absolute stereochemistry of barbaline, a diterpenoid alkaloid from *Delphinium barbeyi* 875 G. D. MANNERS, R. Y. WONG, M. BENSON, M. H. RALPHS and J. A. PFISTER
- Pyrahoquinolones and acridones from *Vepris bilocularis* 881 G. BRADER, M. BACHER, H. GREGER and O. HOFER
- An imidazole alkaloid and other constituents from *Pilocarpus trachyllophus* 885 M. ANDRADE-NETO, P. H. MENDES and E. R. SILVEIRA
- Short Reports**
- A keto fatty acid from *Smilax macrophylla* seed oil 889 C. D. DAULATABAD, G. G. BHAT and A. M. JAMKHANDI
- Taccalonolides from *Tacca plantaginea* 891 JIHUI SHEN, ZHONGLIANG CHEN and YISHENG GAO
- Sulphated steroidal derivatives from *Ruscus aculeatus* 895 A. OULAD-ALI, D. GUILLAUME, R. BELLE, B. DAVID and R. ANTON
- Prionitisides A and B, two phenolic glycosides from *Salvia prionitis* 899 LI-MIN ZHAO, XIAO-TIAN LIANG and LIAN-NIANG LI
- Flavonols and isoflavones from *Cotoneaster simonsii* 903 E. PALME, A. R. BILIA and I. MORELLI
- Nothapodytines A and B from *Nothapodytes foetida* 907 TIAN-SHUNG WU, YU-YI CHAN, YANN-LII LEU, CHING-YUH CHERN and CHIEH-FU CHEN
- 3-Hydroxytalatisamine from *Aconitum nasutum* 909 A. H. MERİÇLİ, F. MERİÇLİ, H. BECKER, R. İLARSLAN and A. ULUBELEN

Number 4

Announcement

ix

Growth and Metabolism

- Gibberellins in immature seed of *Prunus cerasus*: structure determination and synthesis of gibberellin, GA₉₅ (1,2-didehydro-GA₂₀) 913 M. NAKAYAMA, T. YOKOTA, R. SOHMA, L. N. MANDER, B. TWITCHIN, H. KOMATSU, H. MATSUI and M. J. BUKOVAC
- Synthesis and confirmation of structure of three 13,15 β -dihydroxy C-20 gibberellins, GA₁₀₀, GA₁₀₁ and GA₁₀₂, isolated from the seeds of *Helianthus annuus* L. 921 D. J. OWEN, L. N. MANDER, P. GASKIN and J. MACMILLAN
- Ecdysone 20-monooxygenase, a cytochrome P450 enzyme from spinach, *Spinacia oleracea* 927 R. J. GREBENOK, D. W. GALBRAITH, I. BENVENISTE and R. FEYEREISEN
- Inhibition of polyphenol oxidase by copper-metallothionein from *Aspergillus niger* 935 M. GOETGHEBEUR and S. KERMASHA
- Isolation and characterization of blackspot pigments from potato tubers 941 L. H. STEVENS and E. DAVELAAR
- The phenolic domain of potato suberin: structural comparison with lignins 949 C. LAPIERRE, B. POLLET and J. NÉGREL
- Kinetic characterization of UDP-glucose pyrophosphorylase from germinated barley (malt) 955 L. ELLING
- Post-harvest biochemical changes associated with the softening phenomenon in *Capsicum annuum* fruits 961 K. M. P. SETHU, T. N. PRABHA and R. N. THARANATHAN

- Gas chromatographic-mass spectrometric identification of betaine lipids in *Chroomonas salina*
- Titrimetric test for lipase activity using stabilized triolein emulsions
- Cercospora beticola* toxins. Determination of O_2^- scavenging activity of beticolin-1
- Compartmentation of caffeine and related purine alkaloids depends exclusively on the physical chemistry of their vacuolar complex formation with chlorogenic acids
- Ecological Biochemistry**
- Nematicidal hydrocarbons from *Mucuna aterrima*
- Naphthalene—a constituent of *Magnolia* flowers
- Phytotoxic constituents from *Bunias orientalis* leaves
- 5-Deoxyflavones from *Parkia clappertoniana*
- Sesquiterpene alcohols from foliage of *Fitzroya cupressoides*
- Biosynthesis**
- The biotransformation of Ambrox® and sclareolide by *Cephalosporium aphidicola*
- Differential response of microalgae to the substituted pyridazinone, sandoz 9785, reveal different pathways in the biosynthesis of eicosapentaenoic acid
- Cell Culture and Biotechnology**
- Aliphatic and aromatic glycosides from the cell cultures of *Lycopersicon esculentum*
- Novel anthocyanins produced in petals of genetically transformed lisianthus
- Betacyanins from plants and cell cultures of *Phytolacca americana*
- Chemotaxonomy**
- Leaf wax ketones in the genus *Coincya*
- Fatty acids and triacylglycerols in seeds of Pinaceae species
- Two malonylated anthocyanidin glycosides in *Ranunculus asiaticus*
- Neo-clerodane diterpenoids from *Scutellaria altissima* and *S. albida*
- Bioactive Plant Products**
- Steroidal saponins from *Hosta longipes* and their inhibitory activity on tumour promoter-induced phospholipid metabolism of HeLa cells
- Plant Chemistry**
- Hot water-soluble polysaccharides from tetrasporic *Pterocladia capillacea*
- Molecular species of wax esters in *Cereus peruvianus*
- 967 W. EICHENBERGER, H. GFELLER, P. GREY, C. GRIBI and R. J. HENDERSON
- 973 A. HOPPE and R. R. THEIMER
- 979 C. RUSTÉRUCCI, M.-L. MILAT and J.-P. BLEIN
- 985 S. S. M. WALDHAUSER and T. W. BAUMANN
- 997 M. A. NOGUEIRA, J. S. DE OLIVEIRA and S. FERRAZ
- 999 H. AZUMA, M. TOYOTA, Y. ASAKAWA and S. KAWANO
- 1005 H. DIETZ and P. WINTERHALTER
- 1011 E. LEMMICH, C. O. ADEWUNMI, P. FURU, A. KRISTENSEN, L. LARSEN and C. E. OLSEN
- 1015 L. G. COOL
- 1021 J. R. HANSON and A. TRUNEH
- 1025 I. KHOZIN and Z. COHEN
- 1031 S. DE ROSA, A. DE GIULIO and G. TOMMONARO
- 1035 K. R. MARKHAM
- 1039 W. SCHLIEMANN, R. W. JOY IV, A. KOMAMINE, J. W. METZGER, M. NIMTZ, V. WRAY and D. STRACK
- 1047 J. VIOQUE, J. PASTOR and E. VIOQUE
- 1051 A. B. IMBS and L. Q. PHAM
- 1055 K. TOKI, M. TAKEUCHI, N. SAITO and T. HONDA
- 1059 M. BRUNO, F. PIOZZI, B. RODRÍGUEZ, M. C. DE LA TORRE, N. VASSALLO and O. SERVETTAZ
- 1065 Y. MIMAKI, T. KANMOTO, M. KURODA, Y. SASHIDA, Y. SATOMI, A. NISHINO and H. NISHINO
- 1071 M. I. ERREA and M. C. MATULEWICZ
- 1075 V. M. DEMBITSKY and T. REZANKA

Epomusenins A and B, two acetogenins from fruits of <i>Rollinia mucosa</i>	1081	YUAN-YING CHEN, FANG-RONG CHANG, HSIN-FU YEN and YANG-CHANG WU
Nepetanudosides and iridoid glucosides having novel stereochemistry from <i>Nepeta nuda</i> ssp. <i>albiflora</i>	1085	Y. TAKEDA, T. YAGI, T. MATSUMOTO, G. HONDA, M. TABATA, T. FUJITA, T. SHINGU, H. OTSUKA, E. SEZIK and E. YESILADA
Sesterterpenes and other constituents of <i>Salvia yosgadensis</i>	1089	G. TOPCU, A. ULUBELEN, T. C.-M. TAM and CHUN TAO-CHE
A 1,5- <i>cis</i> -guaianolide glucoside from flowers of <i>Arnica mollis</i>	1093	I. MERFORT, G. WILLUHN, D. WENDISCH and D. GONDOL
Three new oxygenated cadinanes from <i>Baccharis</i> species	1097	C. L. QUEIROGA, V. L. FERRACINI and A. J. MARSAIOLI
Amarisolide, a neo-clerodane diterpene glycoside from <i>Salvia amaris-sima</i>	1105	E. MALDONADO, J. CÁRDENAS, H. BOJÓRQUEZ, E. M. ESCAMILLA and A. ORTEGA
Tetracyclic triterpenoids from <i>Glycosmis arborea</i>	1109	A. K. CHAKRAWARTY, B. DAS, K. MASUDA and H. AGETA
β -Amyrin acetate epoxide from <i>Canarina canariensis</i>	1115	E. M. GAYDOU, R. FAURE and E. WOLLENWEBER
Matesaponin 5, a highly polar saponin from <i>Ilex paraguariensis</i>	1119	K. H. KRAEMER, A. T. C. TAKETA, E. P. SCHENKEL, G. GOSMANN and D. GUILLAUME
Araliasaponins XII–XVIII, triterpene saponins from the roots of <i>Aralia chinensis</i>	1123	T. MIYASE, N. SUTOH, DONG MING ZHANG and A. UENO
Saponins from <i>Mussaenda pubescens</i>	1131	WEIMIN ZHAO, RENSHENG XU, GUOWEI QIN, T. VAISAR and M. S. LEE
Pregnane glycosides from <i>Caralluma retrospiciens</i>	1135	A. F. HALIM and A. T. KHALIL
Somalenone, a C ₂₆ sterol from the marine red alga <i>Melanothamnus somalensis</i>	1141	V. U. AHMAD, A. H. MEMON, M. S. ALI, S. PERVEEN and M. SHAMEEL
Naphthohydroquinone glucosides of <i>Drosera rotundifolia</i> and <i>D. intermedia</i> from <i>in vitro</i> cultures	1145	J. BUDZIANOWSKI
Anthraquinones from the polar fractions of <i>Galium sinaicum</i>	1149	A. A. EL-GAMAL, K. TAKEYA, H. ITOKAWA, A. F. HALIM, M. M. AMER, H.-E. A. SAAD and S. A. AWAD
Four stilbenoids from the orchid <i>Agrostophyllum khasiyanum</i>	1157	P. L. MAJUMDER, S. LAHIRI and N. MUKHOTI
Oligostilbenes from <i>Vitis heyneana</i>	1163	WEN-WU LI, LI-SHENG DING, BO-GANG LI and YAO-ZU CHEN
Neolignans and a sesquiterpene from <i>Caryodaphnopsis tonkinensis</i>	1167	NGUYEN HOANG ANH, H. RIPPERGER, T. VAN SUNG and G. ADAM
An hydrolysable tannin and accompanying polyphenols from <i>Melaleuca leucadendron</i>	1171	T. YOSHIDA, T. MARUYAMA, A. NITTA and T. OKUDA
Acetophenones and other constituents from the roots of <i>Melicope erromangensis</i>	1175	F. MUYARD, A. N. BISSOUE, F. BEWALOT, F. TILLEQUIN, P. CABALION and J. VAQUETTE

Two isomeric benzodipyrone derivatives from <i>Calophyllum inophyllum</i>	1181	N. U.-D. KHAN, N. PARVEEN, M. P. SINGH, R. SINGH, B. ACHARI, P. P. G. DASTIDAR and P. K. DUTTA
Phenolics from inner bark of <i>Pinus sylvestris</i>	1185	H. PAN and L. N. LUNDGREN
4-Hydroxyphenylpropan-7,8-diols and derivatives from <i>Narvalina domingensis</i>	1191	B. A. A. A. BALBOUL, A. A. AHMED, H. OTSUKA and A. DE ADAMS
Two xanthenes from roots of <i>Cratoxylum formosanum</i>	1195	M. IINUMA, H. TOSA, T. ITO, T. TANAKA and D. A. MADULID
A biflavonoid from <i>Dysoxylum lenticellare</i> Gillespie	1199	K. HE, B. N. TIMMERMANN, A. J. ALADESANMI and L. ZENG
Nevadensin glycosides from <i>Lysionotus pauciflorus</i>	1203	Y. LIU, H. WAGNER and R. BAUER
Highly oxygenated flavonoids from <i>Murraya paniculata</i>	1207	T. KINOSHITA and K. FIRMAN
Spermine alkaloids from <i>Albizia schimperana</i>	1211	G. M. RUKUNGA and P. G. WATERMAN
Pyrrolizidine alkaloids from <i>Cynoglossum creticum</i>	1217	A. EL-SHAZLY, T. SARG, L. WITTE and M. WINK
Short Reports		
Iridoid glycosides from <i>Thunbergia grandiflora</i>	1223	L. D. ISMAIL, M. M. EL-AZZI, T. I. KHALIFA and F. R. STERNITZ
Macedonine, a non-glycosidic iridoid from <i>Galium macedonicum</i>	1227	M. MITOVA, N. HANDJIEVA, S. SPASSOV and S. POPOV
Sesquiterpene lactones from <i>Artemisia lerchiana</i>	1231	M. N. TODOROVA and M. L. KRASTEVA
A limonoid from <i>Turraea floribunda</i>	1235	B. TORTO, A. HASSANALI, E. NYANDAT and M. D. BENTLEY
Astrotrichilin, a limonoid from <i>Astrotrichilia asterotricha</i>	1239	D. A. MULHOLLAND, J. J. NAIR and D. A. H. TAYLOR
Gallotannins and flavonoids from <i>Haematoxylon campechianum</i>	1243	F. E. KANDIL, N. H. EL-SAYED, H. N. MICHEAL, M. S. ISHAK and T. J. MABRY
Flavonoids from <i>Isodon oresbius</i>	1247	HUANG HAO, SUN HANDONG and ZHAO SHOUXUN
Norditerpenoid alkaloids from <i>Delphinium formosum</i>	1249	F. MERİÇLİ, A. H. MERİÇLİ, H. BECKER, A. ULUBELEN, S. ÖZDEN, N. DÜRÜST and M. TANKER
Norditerpenoid alkaloids from roots of <i>Aconitum finetianum</i>	1253	GONG WU, SHANHAO JIANG and DAYUAN ZHU
A benzoxepine derivative from <i>Delphinium formosum</i>	1257	F. MERİÇLİ, A. H. MERİÇLİ, H. BECKER and A. ULUBELEN

Number 5

Growth and Metabolism

Synthesis and potato tuber-inducing activity of methyl 5',5',5'-tri-fluorojasmonate	1259	H. KIYOTA, M. SAITOH, T. ORITANI and T. YOSHIHARA
Gibberellins in endosperm and embryos of <i>Marah macrocarpus</i>	1263	J. MACMILLAN and P. GASKIN
Polygalacturonase inhibitors in bean pods	1267	R. PRESSEY

Tobacco anionic peroxidase overexpressed in transgenic plants: aerobic oxidation of indole-3-acetic acid	1271	I. G. GAZARYAN and L. M. LAGRIMINI
Structural determination of colourless and yellow dimers resulting from (+)-catechin coupling catalysed by grape polyphenoloxidase	1279	S. GUYOT, J. VERCAUTEREN and V. CHEYNIER
Relative amounts and enantiomeric compositions of monoterpene hydrocarbons in xylem and needles of <i>Picea abies</i>	1289	M. PERSSON, K. SJÖDIN, A.-K. BORG-KARLSON, T. NORIN and I. EKBERG
Ecological Biochemistry		
Bakuchiol derivatives from the leaves of <i>Psoralea glandulosa</i>	1299	C. LABBÉ, F. FAINI, J. COLL and J. D. CONNOLLY
Acyl secoiridoids and antifungal constituents from <i>Gentiana macrophylla</i>	1305	R. X. TAN, J.-L. WOLFENDER, L. X. ZHANG, W. G. MA, N. FUZZATI, A. MARSTON and K. HOSTETTMANN
Antifungal and antibacterial naphthoquinones from <i>Newbouldia laevis</i> roots	1315	S. GAFNER, J.-L. WOLFENDER, M. NIANGA, H. STOECKLI-EVANS and K. HOSTETTMANN
Phenolic and other metabolites of <i>Phellinus pini</i> , a fungus pathogenic to pine	1321	W. A. AYER, D. J. MUIR and P. CHAKRAVARTY
Biosynthesis		
Biosynthetic studies on chlorinated anthraquinones in the lichen <i>Nephroma laevigatum</i>	1325	P. A. COHEN and G. H. N. TOWERS
Tropic acid moiety of atropine may be recycled in <i>Duboisia</i>	1331	Y. KITAMURA, M. SHIGEHIO and T. IKENAGA
Chemotaxonomy		
Epicuticular waxes and glaucousness of <i>Encephalartos</i> leaves	1335	R. OSBORNE and J. F. STEVENS
Distribution of betaine lipids in marine algae	1341	M. KATO, M. SAKAI, K. ADACHI, H. IKEMOTO and H. SANO
Polar lipids and fatty acids of some marine macrophytes from the Yellow Sea	1347	V. E. VASKOVSKY, S. V. KHOTIMCHENKO, BANGMEI XIA and LI HEFANG
Fatty acid composition of some seed oils of the Sapindaceae	1357	V. SPITZER
Sesquiterpenoids from the liverworts <i>Bazzania trilobata</i> and <i>Porella canariensis</i>	1361	F. NAGASHIMA, S. MOMOSAKI, Y. WATANABE, S. TAKAOKA, S. HUNECK and Y. ASAKAWA
Chemotaxonomy of the Argentinian species of <i>Gaillardia</i>	1367	E. M. PETENATTI, M. J. PESTCHANKER, L. A. DEL VITTO and E. GUERREIRO
Plant Chemistry		
Sesquiterpene lactones from <i>Stevia vago</i>	1369	L. R. HERNÁNDEZ, C. A. N. CATALÁN, C. M. CERDA-GARCÍA-ROJAS and P. JOSEPH-NATHAN
Pseudoanisatin-like sesquiterpene lactones from the pericarps of <i>Illicium dunnianum</i>	1375	H. JIANMEI and Y. CHUNSHU
Biogenetically important quinonemethides and other triterpenoid constituents of <i>Salacia reticulata</i>	1377	B. DHANABALASINGHAM, V. KARUNARATNE, Y. TEZUKA, T. KIKUCHI and A. A. L. GUNATILAKA
Triterpenes of <i>Prunus africana</i> bark	1387	C. FOURNEAU, R. HOCQUEMILLER and A. CAVÉ
27-Nor-triterpenoid glycosides from <i>Adina rubella</i>	1391	ZHI-SHENG HE, SHI-YUE FANG, PING WANG and JING-HAI GAO

Triterpenoids, lignans and a benzofuran derivative from the bark of <i>Aglaia elaeagnoides</i>	1395 N. FUZZATI, W. DYATMIKO, A. RAHMAN, F. ACHMAD and K. HOSTETTMANN
<i>Seco</i> -protolimonoids from <i>Trichilia elegans</i> ssp. <i>elegans</i>	1399 F. R. GARCEZ, W. S. GARCEZ, E. D. RODRIGUES, V. J. POTT and N. F. ROQUE
Saponins from <i>Fagonia mollis</i>	1405 F. R. MELEK, T. MIYASE, O. D. EL-GINDI, S. M. ABDEL-KHALIK and M. Y. HAGGAG
Steroid saponins from <i>Solanum laxum</i>	1409 F. FERREIRA, S. SOULÉ, A. VAZQUEZ, P. MOYNA and L. KENNE
Steroidal saponins from fruits of <i>Tribulus terrestris</i>	1417 W. YAN, K. OHTANI, R. KASAI and K. YAMASAKI
Bianthraquinones from <i>Senna didymobotrya</i>	1423 G. ALEMAYEHU, A. HAILU and B. M. ABEGAZ
Acidic metabolites from <i>Phycomyces blakesleeanus</i>	1427 A. F. BARRERO, J. E. OLTRA and J. A. POYATOS
A neolignan glycoside and acylated iridoid glucosides from stem bark of <i>Alangium platanifolium</i>	1435 H. OTSUKA, N. KASHIMA and K. NAKAMOTO
Two lignans and an aryl alkanone from <i>Myristica dactyloides</i>	1439 H. M. T. B. HERATH and A. M. A. PRIYADARSHANI
Chromanones, benzofurans and other constituents from <i>Ophryosporus lorentzii</i>	1443 E. E. SIGSTAD, C. A. N. CATALÁN, J. G. DÍAZ and W. HERZ
Three biflavonoids from <i>Daphne odora</i>	1447 M. TANIGUCHI and K. BABA
Isoflavonoids and chalcones from <i>Anthyllis hermanniae</i>	1455 L. PISTELLI, K. SPERA, G. FLAMINI, S. MELE and I. MORELLI
Twenty-three flavonoids from <i>Lonchocarpus subglaucescens</i>	1459 A. F. MAGALHÃES, A. M. G. A. TOZZI, B. H. L. N. SALES and E. G. MAGALHÃES
A pterocarpan from <i>Erythrina orientalis</i>	1473 H. TANAKA, T. TANAKA and H. ETOH
Quinoline-2-carboxylic acids from <i>Ephedra</i> species	1477 A. N. STARRATT and S. CAVENEY
Alkaloids from trunk bark of <i>Hernandia nymphaeifolia</i>	1479 JIH-JUNG CHEN, IAN-LIH TSAI, TSUTOMA ISHIKAWA, CHYI-JIA WANG and IH-SHENG CHEN
Two pyrroloquinazolines from <i>Adhatoda vasica</i>	1485 R. K. THAPPA, S. G. AGARWAL, K. L. DHAR, V. K. GUPTA and K. N. GOSWAMI
Book reviews	1489

Number 6

Growth and Metabolism

Ammonium ion salvage by glutamate dehydrogenase during defence response in maize	1491 G. O. OSUJI and W. C. MADU
Purification of polyphenol oxidase free of the storage protein patatin from potato tuber	1499 J. C. PARTINGTON and G. P. BOLWELL
The effect of sodium dodecyl sulphate on polyphenol oxidase	1503 M. JIMÉNEZ and F. GARCÍA-CARMONA

Characterization of a tyrosinase from <i>Amanita muscaria</i> involved in betalain biosynthesis	1511	L. A. MUELLER, U. HINZ and J.-P. ZRÝD
Characterization of two cyano glucosyltransferases from cassava leaves	1517	H. MEDERACKE, B. BIEHL and D. SELMAR
Trace element concentrations in the fruit peels and trunks of <i>Musa paradisiaca</i>	1523	M. D. SELEMA and M. E. FARAGO
Halocarbon production and <i>in vivo</i> brominating activity of <i>Eucheuma denticulatum</i>	1527	J. SUNDSTRÖM, J. COLLÉN, K. ABRAHAMSSON and M. PEDERSÉN
Detection, isolation and structure elucidation of a chlorophyll <i>a</i> catabolite from autumnal senescent leaves of <i>Cercidiphyllum japonicum</i>	1531	C. CURTY and N. ENGEL
Ecological Biochemistry		
Isotentoxin, a conversion product of the phytotoxin tentoxin	1537	B. LIEBERMANN, R. ELLINGER and E. PINET
A phytotoxic pimarane diterpene of <i>Sphaeropsis sapinea</i> f. sp. <i>cupressi</i> , the pathogen of a canker disease of cypress	1541	A. EVIDENTE, L. SPARAFANO, A. MOTTA, F. GIORDANO, O. FIERRO and S. FRISULLO
Relationship between the fungus <i>Ceratocystis fimbriata coffea</i> and the canker disease of the coffee tree	1547	G. GREMAUD and R. TABACCHI
Iron withholding by plant polyphenols and resistance to pathogens and rots	1551	I. MILA, A. SCALBERT and D. EXPERT
Biosynthesis		
Subcellular localization of acyltransferases for quinolizidine alkaloid biosynthesis in <i>Lupinus</i>	1557	H. SUZUKI, Y. KOIKE, I. MURAKOSHI and K. SAITO
Induction of early mevalonate pathway enzymes and biosynthesis of end products in potato (<i>Solanum tuberosum</i>) tubers by wounding and elicitation	1563	G. M. BIANCHINI, B. A. STERMER and N. L. PAIVA
Cell Culture and Biotechnology		
Formation of hydroxycinnamoylamides and α -hydroxyacetovanillone in cell cultures of <i>Solanum khasianum</i>	1573	U. MÜHLENBECK, A. KORTENBUSCH and W. BARZ
Production of petroselinic acid from cell suspension cultures of <i>Coriandrum sativum</i>	1581	S.-W. KIM, M.-K. PARK, K.-S. BAE, M.-S. RHEE and J.-R. LIU
Biotransformation of cedrol and related compounds by <i>Mucor plumbeus</i>	1583	B. M. FRAGA, R. GUILLERMO, J. R. HANSON and A. TRUNEH
Production of diterpenoids by <i>Euphorbia calyptrata</i> cell cultures	1587	A. MINGHETTI, N. C. PERELLINO, L. GAROFANO, E. SPERONI and F. F. VINCIERI
<i>trans</i> -Resveratrol-3- <i>O</i> - β -glucoside (piceid) in cell suspension cultures of <i>Vitis vinifera</i>	1591	P. W. TEGUO, A. DECENDIT, J. VERCAUTEREN, G. DEFFIEUX and J.-M. MÉRILLON
Chemotaxonomy		
Distribution of neuroexcitatory amino acids in marine algae	1595	M. SATO, T. NAKANO, M. TAKEUCHI, N. KANNO, E. NAGAHISA and Y. SATO
Sterol composition of the woody plant pathogenic fungus <i>Eutypa lata</i>	1599	L. CHAPUIS, M.-F. CORIO-COSTET and C. MALOSSE
Sterol content as a similarity marker of different organs of two varieties of <i>Chrysanthemum parthenium</i>	1603	B. WILKOMIRSKI and B. DUBIELECKA
A xanthone from <i>Senecio mikanioides</i> leaves	1605	S. CATALANO, S. LUSCHI, G. FLAMINI, P. L. CIONI, E. M. NIERI and I. MORELLI

Bioactive Plant Products

Steroidal saponins from *Nolina recurvata* stems and their inhibitory activity on cyclic AMP phosphodiesterase

1609 Y. MIMAKI, Y. TAKAASHI,
M. KURODA, Y. SASHIDA and
T. NIKAIIDO

Plant Chemistry

Homologous long-chain alkanediols from *Papaver* leaf cuticular waxes

1617 R. JETTER, M. RIEDERER, A. SEYER
and C. MIOSKOWSKI

Some metabolites of *Botrytis cinerea* related to botcinolide

1621 I. G. COLLADO, J. ALEU,
R. HERNÁNDEZ-GALÁN and
J. R. HANSON

Portuloside A, a monoterpene glucoside, from *Portulaca oleracea*

1625 N. SAKAI, K. INADA, M. OKAMOTO,
Y. SHIZURI and Y. FUKUYAMA

Jaspolyside, a secoiridoid glycoside from *Jasminum polyanthum*

1629 YA-CHING SHEN, SAHO-LING LIN and
CHYH-CHUNG CHEIN

Iridoid glucosides in *Plantago alpina* and *P. altissima*

1633 S. R. JENSEN, C. E. OLSEN, K. RAHN
and J. H. RASMUSSEN

Sesquiterpene lactones and other constituents of *Eirmocephala megaphylla* and *Cyrtocymura cincta*

1637 S. BORKOSKY, D. A. VALDÉS,
A. BARDÓN, J. G. DÍAZ and W. HERZ

Sesquiterpenoids and diterpenoids from the liverwort *Jungermannia truncata*

1641 M. S. BUCHANAN, J. D. CONNOLLY,
A. A. KADIR and D. S. RYCROFT

Zythiostromic acids, diterpenoids from an antifungal *Zythiostroma* species associated with aspen

1647 W. A. AYER and A. Q. KHAN

Two diterpenoids from copaiba oil

1653 H. MONTI, N. TILIACOS and R. FAURE

Diterpenes and related cycloadducts from *Taiwania cryptomerioides*

1657 WANG-HONG LIN, JIM-MIN FANG and
YU-SHIA CHENG

Triterpenoids of *Isodon loxothyrus*

1665 HUANG HAO, SUN HAN-DONG and
ZHAO SHOU-XUN

Glabretal triterpenoids from *Dysoxylum muelleri*

1667 D. A. MULHOLLAND, J. J. NAIR and
D. A. H. TAYLOR

Triterpenoid saponins from *Bupleurum smithii* var. *parvifolium*

1673 YU-YING ZHAO, HE-SHENG LUO,
BIN WANG, LI-BIN MA,
GUANG-ZHONG TU and
RU-YI ZHANG

Steroidal glycosides from *Tribulus terrestris*

1677 GONG WU, SHANHAO JIANG,
FUXIANG JIANG, DAYUAN ZHU,
HOUMING WU and SHAOKAI JIANG

Three oxanthrones from *Aloe littoralis*

1683 E. DAGNE, B.-E. VAN WYK,
D. STEPHENSON and W. STEGLICH

Qianhu coumarin I from *Peucedanum praeruptorum*

1689 LING-YI KONG, ZHI-DA MIN, YI LI,
XIAN LI and YUE-HU PEI

Carboxylated α -pyrone derivatives and flavonoids from the liverwort *Dumortiera hirsuta*

1693 L. KRAUT, R. MUES, A. SPEICHER,
M. WAGMANN and T. EICHER

Novel chlorometabolites produced by *Bjerkandera* species

1699 H. J. SWARTS, F. J. M. VERHAGEN,
J. A. FIELD and J. B. P. A. WUNBERG

A dioxoaporphine and other alkaloids of two annonaceous plants of Sri Lanka

1703 E. M. K. WIJERATNE, Y. HATANAKA,
T. KIKUCHI, Y. TEZUKA and
A. A. L. GUNATILAKA

Book Review

1707

Errata and Corrigenda

1709