

Anti-Oxidant

Web URL: <http://www.vspub.com/journals/jn-JouBioSciPolEde.html>

1. Chemical modification of manganese porphyrins with biomolecules for new functional antioxidants

Asayama, S., Mori, T., Nagaoka, S. and Kawakami, H.

Department of Applied Chemistry, Tokyo Metropolitan University, Tokyo, Japan 192-0397

Journal of Biomaterials Science, Polymer Edition 2003, **14**(11), 1169-1179; *C.A.* **141**(2): 19497u

Abstract: To improve the anti-oxidant activity of manganese porphyrins, they were conjugated with biomolecules.

Activity: Mn-porphyrins, when combined with enzyme catalase, showed dual functions of superoxide dismutase (SOD) as well as catalase. On combining with carbohydrate, these not only displayed SOD, but also made carbohydrates as active binding sites.

Origin: Synthetic

Web URL: <http://www.sinica.edu.tw/~ccswww/jccs.htm>

2. Benzoliganoid and polyphenols from *Origanum vulgare*

Yun-Lian, L., Chuen-Neu, W., Young-Ji, S., Tzu-Ying, L. and Wan-Yi, W.

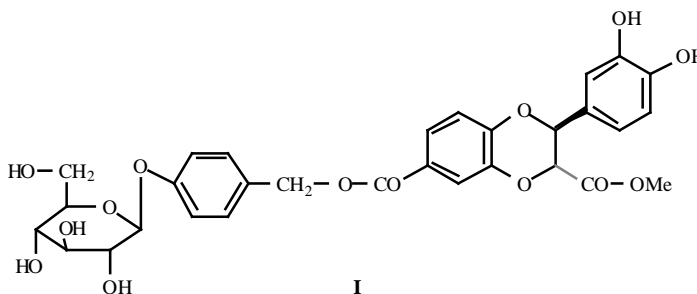
National Research Institute of Chinese Medicine, Taipei, Taiwan 112

Journal of the Chinese Chemical Society 2003, **50**(5), 1079-1083; *C.A.* **141**(2): 20380g

Abstract: Phytochemical studies were carried out on the plant, *Origanum vulgare*, which resulted in the isolation of one new and nine polyphenolic compounds. The new isolated chemical constituent is a dihydrobenzodioxane derivative origalignanof (I). Spectral data and biological studies are also provided in the article. The known compounds salvianolic acid A (II), salvianolic acid C (III), lithospermic acid (IV), apigenin 7-O- β -D-glucuronide, apigenin 7-O- β -D-(6-methyl) glucuronide (V), luteolin, 7-O- β -D-glucopyranoside and luteolin 7-O- β -D-xylopyranoside were also isolated.

Activity and bioassay: Excellent antioxidant DPPH radical scavenging activity was observed by compounds II, III and IV, exhibiting the values of $EC_{50}^s = 7.2 \pm 0.4$, $EC_{50}^s = 9.6 \pm 0.9$ and 9.5 ± 0.7 μ M, respectively.

Origin: Natural products



3. Edaravone, a newly developed radical scavenger protects against ischemia-reperfusion injury of the small intestine in rats

Naoya, T., Norimasa, Y., Tomohisa, T., Kazuhiro, K., Yutaka, I., Eiko, I., Kazuhiko, U., Satoshi, K., Yuji, I. H., Takeshi, O. and Toshikazu, Y.

Department of Inflammation and Immunology, Graduate School of Medical Sciences, Kyoto Prefectural University of Medicine, Kyoto, Japan 602-8566

International Journal of Molecular Medicine 2004, **13**(1), 105-109; *C.A.* **141**(2): 17516a

Abstract: Scavenging oxygen-derived free radicals effect of edaravone (**I**, 3-methyl-1-phenyl-pyrazolin-5-one), on ischemic-reperfusion (I-R) injury of small intestine was studied.

Activity and bioassay: I-R injury caused increased levels of luminal protein Hb, TBA-reactive substances and MPO activity. These increased levels are remarkably controlled by **I**. Compound **I** also minimized microscopic damage of I-R. Both CINC-1 protein and CINC-1 mRNA increased by I-R injury were significantly reduced by **I**. The mucosal concentration of cytokine-induced neutrophil chemoattractant (CINC)-1 was analyzed by ELISA. CINC-1 mRNA was determined by the reverse-transcription polymerase chain reaction (RT-PCR).

Origin: Synthetic

Web URL: pubs.acs.org/journals/jnprdf

4. Bilirubin as an antioxidant: kinetic studies of the reaction of bilirubin with peroxy radicals in solution, micelles, and lipid bilayers

Hatfield, G.L and Barclay, L.R.C.

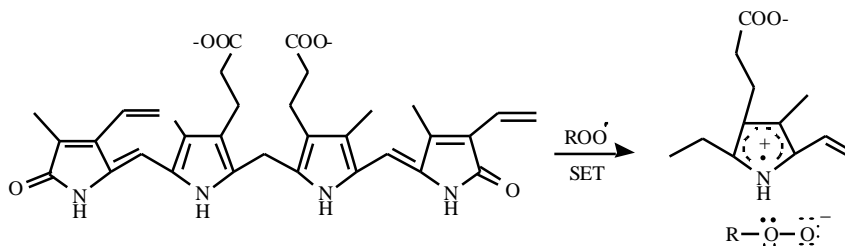
Department of Chemistry, Mount Allison University, Sackville, New Brunswick E4L 1G8, Canada

Organic Letters 2004, **6**(10), 1539-1542; *C.A.* **141**(1): 3105d

Abstract: Bilirubin (BR), a hemoglobin metabolite, known as photo-oxidation sensitizer, was studied for its antioxidant activity.

Activity and bioassay: The antioxidant properties of BR were tested in chlorobenzene containing the substrates styrene or cumene, in micelles of sodium dodecyl sulfate (SDS) with methyl linoleate (ML) substrate; and in lipid bilayers of egg lecithin (EL) and of 1-palmitoyl-2-linoleoyl-phosphatidyl choline (PLPC). $k_{inh} = 5.0 \times 10^4 \text{ M}^{-1} \text{ s}^{-1}$ was shown by BR. BR exhibited significant inhibition of lipid bilayer peroxidation. BR is nearly one-third as active as Trolox, but possessed comparable stoichiometric factor of radical trapping. Antioxidant activity of BR increased markedly in aqueous SDS, where it matched the rate constants, k_{inh} , of the vitamin E analogs, PMHC, or trolox

Origin: Synthetic



Web URL: <http://www.tand.co.uk/journals>

5. Endogenous and dietary indoles; A class of antioxidants and radical scavengers in the ABTS assay

Tomas, H. and Juan, G.

Spanish Council for Scientific Research (CSIC), Instituto de Fermentaciones Industriales Madrid, Spain 28006

Free Radical Research 2004, **38**(3), 323- 331; C.A. **141**(2): 17527e

Abstract: Biological evaluations of twenty-nine indoles and analogs for their antioxidant and radical scavenging activity were performed. These activities were tested against 2,2 -Azino-bis(3-ethylbenzazoline-6-sulfonic acid) ABTS^{*+}

Activity and bioassay: Most of the compounds incorporating indoleamine skeleton like tryptamine, serotonin and methoxytryptamine, neurohormones, etc., showed good potency for both antioxidant and radical scavenging activities in an ABTS assay measuring total antioxidant activity. These compounds showed their trolox equivalent antioxidant capacity (TEAC). Values ranged from 0.66 to 3.9 mM, being more active than trolox and ascorbic acid (1 mM). Melatonin 5-hydroxytryptophan, trp-trp and 5-methoxytryptamine exhibited the strongest antioxidant activity.

Origin: Natural product

Web URL: <http://cpb.pharm.or.jp>

6. A new naphthopyrone from the roots of *Pleuropterus ciliinervis*

Byung-sun, M., Jong-pill, L., Min-Kyun, N., Ren-bo, A., Sang-myung, L., Hyeong-kyu, L, KiHwan, B. and Sam-sik, K.

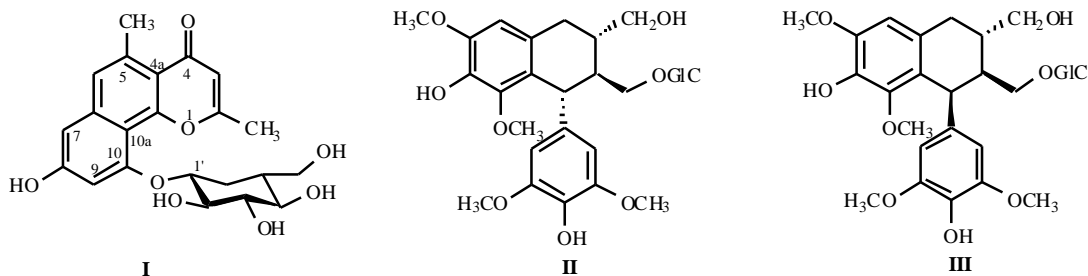
Laboratory of Immunomodulator, Korea Research Institute of Bioscience and Biotechnology, Daejeon, 305-333 South Korea

Chemical & Pharmaceutical Bulletin 2003, **51**(11), 1322-1324; C.A. **141**(1): 4102n

Abstract: The butanol-soluble fraction of the root of *Pleuropterus ciliinervis* led to the isolation of a new naphthopyrone, pleuropyrone A (**I**), isolated along with (-)-lyoniresinol 3a-O- β -D-glucopyranoside (**II**) and (+)-lyoniresinol 3a-O- β -D-glucopyranoside (**III**). All these compounds were examined for their *in vitro* antioxidant activity, such as 1,1-diphenyl-2-picrylhydrazyl (DPPH) and superoxide radical scavenging activities, as well as their inhibitory activity of lipid peroxidation.

Activity: IC₅₀ values of 45.7 and 42.6 μ M were exhibited by compounds **II** and **III** for the scavenging activity against DPPH radicals, whereas these compounds were inactive against the superoxide radical scavenging activity. Inhibitory activity against lipid peroxidation by these compounds was displayed with IC₅₀ 37.4 and 39.1 μ M, respectively. Compound **I** had no significant antioxidant activity.

Origin: Natural product



Web URL: pubs.acs.org/journals/jnprdf/index.htm

7. *Yucca schidigera* bark: phenolic constituents and antioxidant activity

Sonia, P., Paola, M., Wieslaw, O. and Cosimo, P.

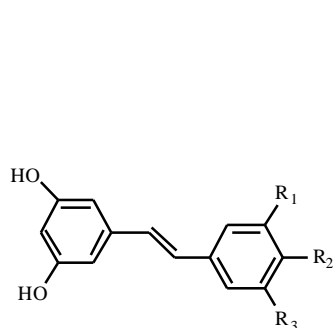
Dipartimento di Scienze Farmaceutiche, Universita degli Studi di Salerno, 84084 Fisciano, Italy

Journal of Natural Products 2004, 67(5), 882-885; C.A. 141(1): 4139e

Abstract: In addition to the known resveratrol (**III**), *trans*-3,3',5,5'-tetrahydroxy-4'-methoxystilbene (**IV**), yuccaols A-C (**V-VII**), yuccaone A (**VIII**), larixinol (**IX**), the methanolic extract of *Yucca schidigera* bark furnished two novel phenolic chemical constituents incorporating unusual spirostructures, yuccaols D (**I**) and E (**II**). All these natural products were tested for antioxidant activity, measuring the free radical scavenging effects determined by the Trolox Equivalent Antioxidant Capacity (TEAC) assay and the coupled oxidation of β -carotene and linoleic acid (autoxidation Assay).

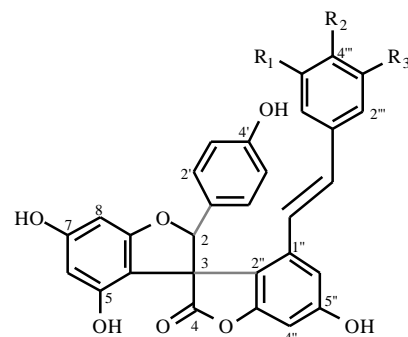
Activity and bioassay: The phenolic extract exhibited strong free radical scavenging activity, which was even stronger than that of quercetin (reference antioxidant compound). Compound **IV** was more potent than compound **III**. Compounds **I**, **II** and **VII** were also found to display strong activity. Antioxidant activity of compound **I-IX** was also examined by measuring free radical scavenging effects by TEAC assay and the coupled oxidation of β -carotene and linoleic acid (autoxidation Assay). All these tested samples, except compound **IV**, were found to display remarkable activity, specifically the yuccaols exhibited the strongest activity BHT (at $t = 120$ min.).

Origin: Natural product



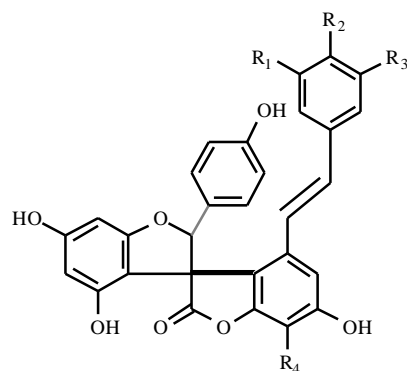
Resveratrol (**III**) $R_1 = H$ $R_2 = OH$ $R_3 = H$

Trans-3,3',5,5'-tetrahydroxy-4'-methoxystilbene (**IV**) $R_1 = OH$ $R_2 = OMe$ $R_3 = OH$



Yuccaol A (**V**) $R_1 = H$ $R_2 = OH$ $R_3 = H$

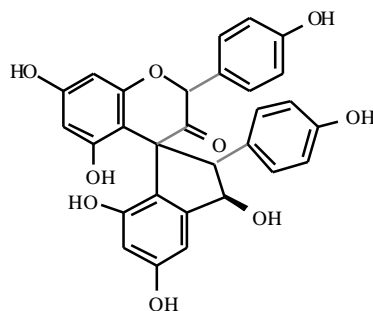
Yuccaol D (**I**) $R_1 = OH$ $R_2 = OMe$ $R_3 = OH$



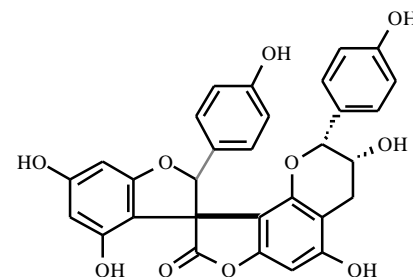
Yuccaol B (**VI**) $R_1 = H$ $R_2 = OH$ $R_3 = H$ $R_4 = H$

Yuccaol C (**VII**) $R_1 = OH$ $R_2 = OMe$ $R_3 = OH$ $R_4 = H$

Yuccaol E (**II**) $R_1 = OH$ $R_2 = H$ $R_3 = OH$ $R_4 = OMe$



Yuccaone A (**VIII**)



Larixinol (**IX**)