

**A081 Antioxidant activity of Thai medicinal plants called 'Hua-khao-yen'**A. Itharat<sup>a,b</sup>, N. Keawpradub<sup>b</sup>, A. Plubrukarn<sup>b</sup>, J. Millst<sup>a</sup>, I. Oru<sup>a</sup> and P.J. Houghton<sup>a</sup><sup>a</sup> Department of Pharmacy, King's College London, Franklin-Wilkins Building, 150 Stamford Street, London SE1 8WA, UK.<sup>b</sup> Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Hat Yai, Songkla 90110, Thailand.

Plants called 'Hua-Khao-Yen' are used as formulae for cancer treatment in Thai traditional medicine and it was found that 'Hao-Khao-Yen' could be *Dioscorea membranacea* Pierre rhizome (Dioscoreaceae) (DM), *D. burmanica* Prain ex Burkill rhizome (Dioscoreaceae) (DB), *Smilax corbularia* Kunth rhizome (Smilacaceae) (SC), *S. glabra* Roxb. rhizome (Smilacaceae) (SG), or *Pygmeopremna herbacea* Prain et Burkill (Verbenaceae) (PM). DM showed the most cytotoxicity against cancer cell lines but was less active for normal cells (1). The DPPH TLC method (2,3) and the lipid peroxidation of lysosomes assay (4) was used to test for antioxidant activity of the 5 plant extracts. It was found that the ethanolic extract of DM rhizome, which demonstrated high and selective cytotoxic activity against human cancer cell lines (1), also showed high antioxidant activity with liposome and DPPH ( $EC_{50} = 8.09, 16.52 \mu\text{g/ml}$  respectively). Two novel naphthopyrone derivative dioscorealide A **1** and B **2** and a novel naphthoquinone, dioscoreanone **3**, which were isolated from the ethanolic extract of DM, showed 21.7%, 0.8% and 33.1% inhibition respectively with the DPPH assay at 100  $\mu\text{g/ml}$ . **1** and **3** thus have high cytotoxicity activity but less antioxidant activity ( $EC_{50} > 100 \mu\text{g/ml}$ ). **1** had a OH group, replaced by methoxy in **2**, so this group appears to be significant for antioxidant activity.

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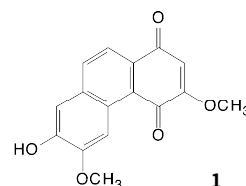
**References:** **1.** Itharat, A. et al (2001) British Pharmaceutical Conference, Science Proceedings Pharmaceutical press, London, p. 162 **2.** Hatano, T. et al (1989) Chem. Pharm. Bull. 37: 2016-2021. **3.** Yamasaki, K. (1994) Chem. Pharm. Bull. 42: 1663-1665. **4.** Mitsuru, U. and Midori, M. (1978) Anal. Bioch. 86: 271-278. **5.** Itharat, A. et al (2001) Lead Compounds from Higher Plants, Book of Abstracts, University of Lausanne, Switzerland, p 108.

**A082 A cytotoxic naphthoquinone from *Dioscorea membranacea***A. Itharat<sup>a,b</sup>, N. Keawpradub<sup>b</sup>, A. Plubrukarn<sup>b</sup> and P.J. Houghton<sup>a</sup><sup>a</sup> Department of Pharmacy, King's College London, Franklin-Wilkins Building, 150 Stamford Street, London SE1 8WA, UK.<sup>b</sup> Department of Pharmacognosy and Pharmaceutical Botany, Faculty of Pharmaceutical Sciences, Prince of Songkla University, Hat Yai, Songkla 90110, Thailand.

Plants named 'Hua-Khao-Yen' are common ingredients in traditional cancer remedies in Thailand (1) and are best-selling medicinal plants in traditional drugstores. Hua-Khao-Yen was found to comprise at least five species, the rhizomes of *Dioscorea membranacea* Pierre (Dioscoreaceae) being the most common. The ethanolic rhizome extract showed high and selective cytotoxic activity against human large cell lung carcinoma (COR-L23), colon cell line (LS-174T) and breast cancer cell line (MCF-7), but was less active to normal human keratinocyte cell line (SVK-14) and normal human fibroblast (HF), using the SRB assay (2,3) A novel naphthoquinone derivative **1**, stigmaterol **2** and  $\beta$ -sitosterol **3** were isolated from the ethanolic extract of *D. membranacea* and, when tested, **1** was found to be most active (see Table).

**Table.**  $IC_{50}$  values ( $\mu\text{g/ml}$ ) of **1-3** against cell lines:

Cell line	<b>1</b>	<b>2</b>	<b>3</b>
COR-L	232.89 $\pm$ 0.1	34.76 $\pm$ 0.1	>100
MCF-7	3.76 $\pm$ 2.5	41.38 $\pm$ 0.0	>100
LS174T	9.96 $\pm$ 0.2	>100	>100
Keratinocyte	16.52 $\pm$ 0.4	>100	>100
Fibroblast	6.67 $\pm$ 0.3	>100	>100



**References:** **1.** Itharat, A. et al. (1998) Wisdom of Southern Thai Traditional Doctors. Prince of Songkla University, Songkla, p.126. **2.** Itharat, A. et al (2001) British Pharmaceutical Conference, Science Proceedings, p 162. **3.** Skehan, P. et al. (1990) J. Natl. Cancer Inst., 82: 1107-1112.