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CHEMICAL CONSTITUENTS OF THE ROOTS OF *Erythrina subumbrans*

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In our continuous interest in the constituents of *Erythrina subumbrans* Merr. (Leguminosae) [1–3], we chose its roots for the first time for phytochemical investigation. In this paper, we report the isolation of 22 compounds, among which are nine pterocarpans: orientanol B (**1**) [4], phaseollin (**2**) [5], erythrabyssin II (**3**) [4], phaseollidin (**4**) [6], erycristagallin (**5**) [7], erystagallin A (**6**) [8], eryvarin D (**7**) [9], erythrabyssin A (**8**) [10], and erythrabissin I (**9**) [6]; three isoflavones: scandenone (**10**) [11], bidwillon C (**11**) [12], and wighteone (**12**) [13, 14]; two 2-arylbenzofurans: bidwillol B (**13**) [12] and eryvarin L (**14**) [15]; two steroids: a mixture of *β*-sitosterol (**15**) and stigmasterol (**16**) [16]; two triterpenes: sophoradiol (**17**) [17, 18] and soyasapogenol B (**18**) [18–20]; one coumestan: sigmoidin K (**19**) [21]; one chromen-4-one: eryvarin X (**20**) [22]; one chalcone: isobavachalcone (**21**) [23]; and coniferaldehyde (**22**) [24]. These compounds were identified by comparison of their physical and spectroscopic data with reported data. Compounds **1**, **4**, **7**, **8**, **11–14**, and **19–22** were found for the first time in this species.

The roots of *E. subumbrans* were collected from Panomsarakam District, Chachoengsao Province, Thailand, in February 2007. The air-dried, powdered roots of *E. subumbrans* (0.93 kg) were extracted successively with *n*-hexane, EtOAc, and MeOH at room temperature. The hexane, EtOAc, and MeOH extracts were filtered and concentrated to dryness under reduced pressure.

The EtOAc extract (210.2 g) was subjected to CC (silica gel; hexane–EtOAc–MeOH gradient) to give 13 fractions (E1–E13). Fraction E5 (2.7 g) was further fractionated by CC (silica gel; hexane–EtOAc, 80:20) to obtain five fractions (E14–E18). Fraction E15 afforded a mixture of **15** and **16** (30 mg), whereas Fr. E16 (258 mg) was separated by CC (silica gel; CH_2Cl_2–MeOH, 10:0.5) to furnish four fractions (E19–E22). Fractions E20 and E21 yielded **1** (26 mg) and **2** (39 mg), respectively. Fraction E6 (2.2 g) was rechromatographed by CC (silica gel; hexane–EtOAc, 80:20) to give six fractions (E23–E28). Fractions E23 and E26 afforded **10** (10 mg) and **3** (119 mg), respectively. Fraction E7 (27.3 g) was resubjected to CC (silica gel; hexane–EtOAc, 80:20) to obtain eight fractions (E29–E36). Fraction E31 (11.9 g) was further fractionated on Sephadex LH-20 and eluted with MeOH to give four fractions (E37–E40). Fraction E39 (2.4 g) was further separated by CC (silica gel; CH_2Cl_2–EtOAc, 50:1) to yield six fractions (E41–E46). Fractions E42 and E43 were separately subjected to CC (silica gel; CH_2Cl_2–hexane–EtOAc, 3:2:0.5) to afford **13** (24 mg) and **4** (18 mg), respectively. Fraction E40 (203 mg) was purified in a similar manner as Fr. E31 to furnish **5** (102 mg). Fraction E32 (1.6 g) was fractionated on Sephadex LH-20 and eluted with MeOH, then further purified by CC (silica gel; hexane–EtOAc, 80:20) to yield **6** (22 mg). Fraction E8 (13.6 g) was further separated in a similar manner as Fr. E32 to give nine fractions (E47–E55). Fractions E49 and E51 furnished **7** (14 mg) and **19** (8 mg), respectively. Fraction E50 (2.3 g) was purified by CC (silica gel; hexane–CH_2Cl_2–EtOAc, 3:2:0.2) to afford **8** (2 mg). Fraction E53 (6.7 g) was reseparated on Sephadex LH-20 and eluted with MeOH–CH_2Cl_2 (80:20) to obtain three fractions (E56–E58). Fraction E57 (4.8 g) was rechromatographed by CC (silica gel; CH_2Cl_2–MeOH, 100:0.5) to give 9 fractions (E59–E67). Fraction E60 was further purified by CC (silica gel; CH_2Cl_2–MeOH, 10:0.1) to furnish **20** (14 mg) and **22** (2 mg), whereas Fr. E63 (483 mg) was purified in a similar manner as Fr. E32 to yield **11** (9 mg) and **9** (35 mg). Fraction E58 (278 mg) was fractionated by CC (silica gel; CH_2Cl_2–MeOH, 100:0.5) to obtain seven fractions (E68–E74). Fractions E69 (14 mg) and E70 (15 mg) were separately purified in a similar manner as Frs. E31 and E32, respectively. Fraction E69 gave **14** (7 mg), whereas Fr. E70 afforded **12** (4 mg) and **21** (1 mg).

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The MeOH extract (150.4 g) was subjected to CC (silica gel; hexane–EtOAc–MeOH gradient) to give nine fractions (M1–M9). Fractions M2 (2 g) and M4 (2.7 g) were separately rechromatographed by CC (silica gel; hexane–EtOAc, 75:25 and 3.5:1.5, respectively) to furnish **17** (44 mg) and **18** (40 mg), respectively.

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