嘉南藥理科技大學專題研究計畫成果報告

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以重疊解析映圖法研究中草藥麻黃生物鹼的成分分析

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計畫類別：□個別型計畫　　　　□整合型計畫

計畫編號：CNAC-91-13

執行期間：91 年 1 月 1 日至 91 年 12 月 31 日

計畫主持人：姜仁章

共同主持人：

計畫參與人員：

執行單位：醫藥化學系

中華民國　92　年　2　月　27　日

Abstract

A simple method for simultaneous determination of six alkaloids (ephedrine, pseudoephedrine, norephedrine, norpseudoephedrine, methylephedrine and methyl-pseudoephedrine) in *Ephedrae Herba* by high-performance liquid chromatography was developed. It was carried out by using a Cosmosil 5C$_{18}$-MS column with a gradient solvent system consisted of phosphate buffer and acetonitrile at 210 nm. The contents of alkaloids in non-pretreated Ephedra extracts could easily be determined in 50 min.

Apparatus and Conditions

The HPLC system consisted of two Waters Model 510 pumps, a Waters Model 680 automated gradient controller (Waters, USA) and an SPD-M10AVP photodiode array detector (210 nm) (Shimadzu, Japan). The separations were obtained with a reversed-phase column (Cosmosil 5 C$_{18}$-MS, 5μ m, 25 cm x 4.6 mm I.D.; Nacalai Tesque, Kyoto, Japan). Two elution modes were employed as follows. One gradient elution for SDS system, used eluent A [50 mM potassium dihydrogenphosphsate buffer solution (adjusted pH=4.0 with H_3PO_4)] and eluent B [H_2O-CH_3CN (3:7, *v/v*)] according to the following A-B profile: 0-10 min, 90-85% A, 10-15% B; 10-30 min, 85-80% A, 15-20% B; 30-35 min, 80-50% A, 20-50% B; 35-40 min, 0% A , 100% B.
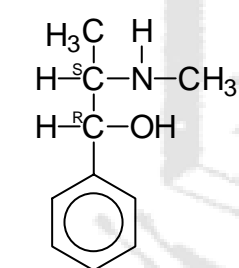
Results

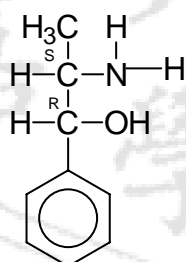**Table 1** Reproducibility of separation of marker substances

	Retention time	PAR
NE	0.05	0.77
NPE	0.04	0.78
E	0.04	0.68
PE	0.04	0.65
MPE	0.03	0.83
ME	0.03	0.80

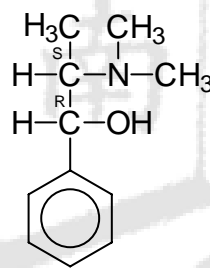*PAR: Peak-area ratio with respect to **BPB** (I.S.)

Fig.1. Structures of the six marker substances
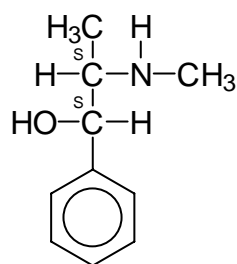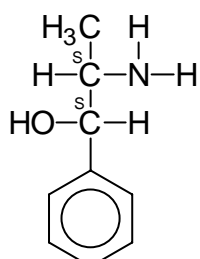
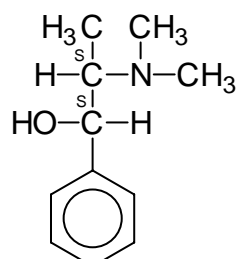**E,** l-ephedrine   **NE,** l-norephedrine   **ME,** l-methylephedrine

PE, d-pseudoephedrine   **NPE,** d-norpseudoephedrine   **MPE,** d-methylpseudoephedrine
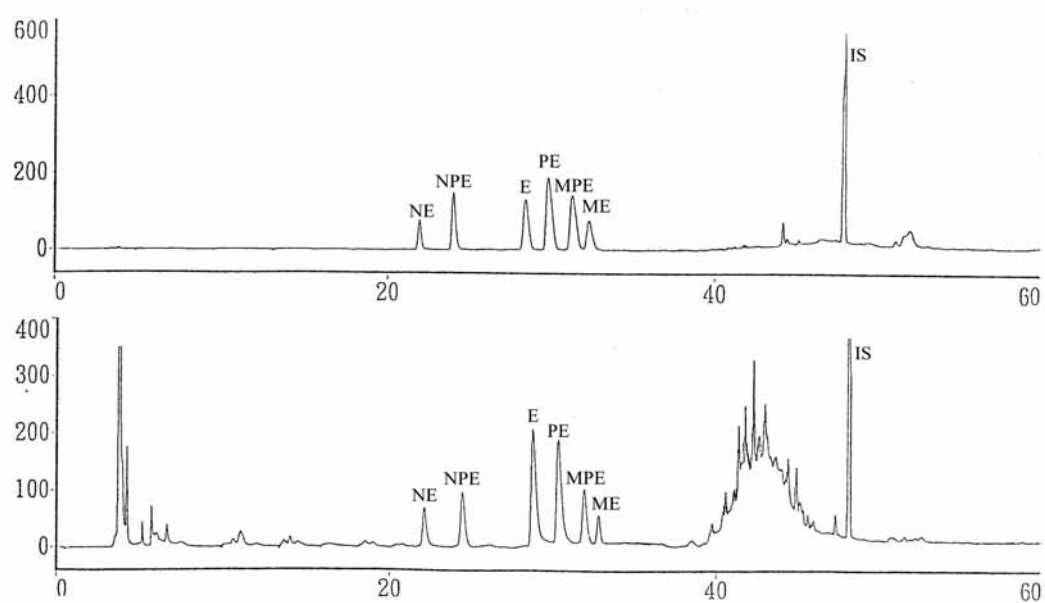
Fig.2. (A) HPLC graph of the six authentic compounds of marker substances (B) HPLC graph of the extract of Ephedra Herba sample (KH_2PO_4 system)