

漢方製剤中のエフェドリン, プソイドエフェドリン,  
ノルエフェドリン, メチルエフェドリンの  
同時HPLC定量分析

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**Simultaneous Determination of Ephedrine, Pseudoephedrine,  
Norephedrine and Methylephedrine in Kampo Medicines by  
High-Performance Liquid Chromatography**

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**ABSTRACT** A simultaneous high-performance liquid chromatographic method for determination of ephedrine, pseudoephedrine, norephedrine and methylephedrine (ephedrine alkaloids) in Kampo medicines which contain Ephedrae Herba was established. The analysis can be accomplished within 25 min with a Wakosil-II 5C18 HG column by isocratic elution using a mixture of water, acetonitrile and sodium dodecyl sulfate (65:35:0.4) as the mobile phase at a flow-rate of 1.0 ml min<sup>-1</sup>, and detection at 210 nm. The detection limits of ephedrine alkaloids are 0.37-1.06  $\mu$ M per injection (5  $\mu$ l). This method was applied to analyze the quantities in eight Kampo decoctions; Mao-to, Makyo-yokukan-to, Makyo-kanseki-to, Yokuinin-to, Sho-seiryu-to, Keimakakuhan-to, Kakkon-to and Kakkon-to-ka-senkyu-sin'i. The concentration (per Ephedra Herba gram) of ephedrine alkaloids was higher in the Makyo-kanseki-to decoction than in the others. Calcium sulfate from Gypsum Fibrosum raised ephedrine alkaloids dissolution in the Makyo-kanseki-to decoction.

抄録 エフェドリン, プソイドエフェドリン, ノルエフェドリン, メチルエフェドリ

ンの同時HPLC定量法を確立し、8種類の桂麻剤の煎液中の含量を分析した。その結果、麻杏甘石湯のエフェドリン、プソイドエフェドリン含量が他の製剤に比べて高い値を示し、エフェドリンアルカロイドの溶解性が石膏の硫酸カルシウムによって上昇することを証明した。