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Comparative Enantioseparation of Monoterpenes by HPLC on Three Kinds of Chiral Stationary Phases with an On-Line Optical Rotatory Dispersion under Reverse Phase Mode

Juta MOOKDASANIT[1)] and Hirotoshi TAMURA[1)]

1) Department of Biochemistry and Food Science, Faculty of Agriculture, Kagawa University

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HPLC enantioseparation of chiral monoterpenes was studied using amylose (AD-H), cellulose (OD-H) and β-cyclodextrin (CD-Ph), phenyl carbamate derivatives as chiral stationary phases (CSPs). The contributions of various functional groups of the chiral monoterpenes in capacity factor (*k*), separation factor (α) and resolution factor (Rs) were investigated. AD-H column clearly showed the chiral recognition in 7 chemicals from a total of 9 analytes and especially for linalool, while the CD-Ph column could achieve efficient enantioseparation on carvone. The enantioseparation mechanism between the analytes and the CSPs is discussed. Chiral HPLC system coupled with ORD detector could be applied to isolate and directly determine the configuration of (3*S*)-(+)-linalool, which is not commercially available. Moreover, 100% enantiomeric excess of the isolated (3*S*)-(+)-linalool was observed from the SPME-GCMS result. Additionally, enantioseparation of (3*S*)-(+)-linalool by preparative HPLC system offered a 500-fold higher sample loading capacity than that of GC.

Keywords: enantioseparation, chiral stationary phases, monoterpenes, HPLC, optical rotatory dispersion detector (ORD)

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