

● Characterization of Chiral Stationary Phases Chemically Bonded with β -Cyclodextrin via Improved Spacer

TN256E

[Abstract]

Cyclodextrins are cyclic oligosaccharides composed of glucose, they have the property of including various molecules in the intramolecular cavity. Since cyclodextrins are optically active substances, it can separate enantiomers. SUMICHIRAL™ OA-7000 is a chiral stationary phase with β -cyclodextrin as chiral selector and can be used for chiral separation of many pharmaceuticals and pesticides. OA-7000 uses a sugar chain as a spacer that binds silica gel and cyclodextrin (Fig. 1), and results in superior resolution and peak shape have been obtained compared to the conventional cyclodextrin stationary phases. In addition, OA-7000 is effective not only for chiral separation but also for positional isomer separation such as disubstituted benzene.

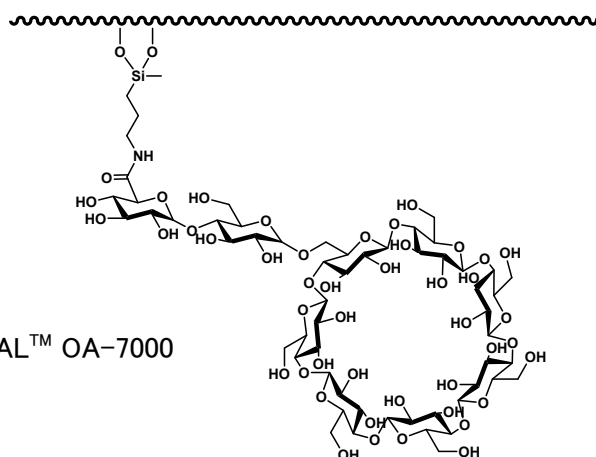


Fig. 1 Structure of SUMICHIRAL™ OA-7000

[Characterization and Applications]

1. Flavanone

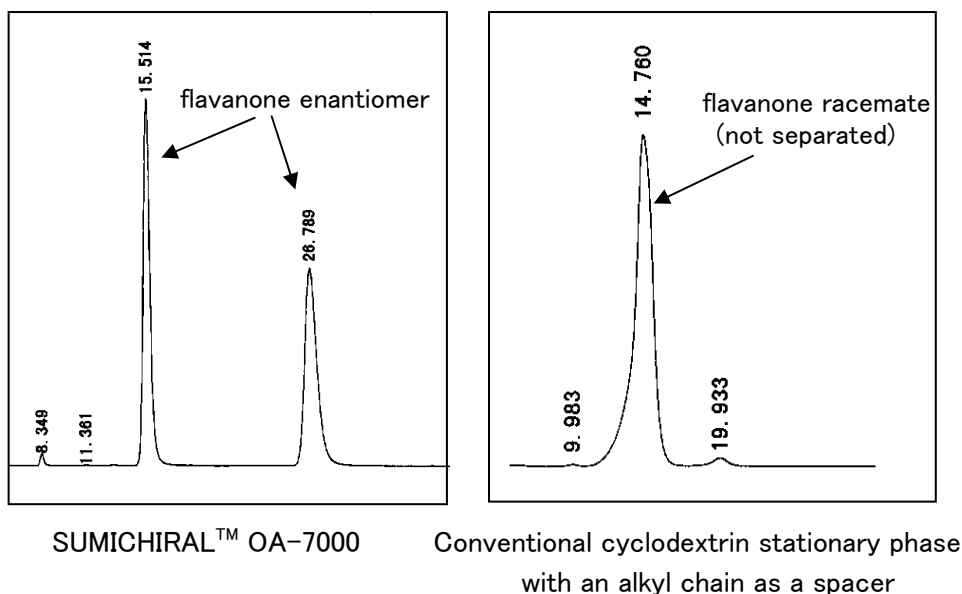
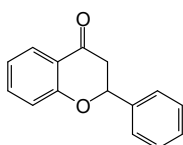


Fig. 2 Enantiomer separation of flavanone on SUMICHIRAL™ OA-7000
Mobile phase : 20 mM phosphate buffer (pH 2.0) / acetonitrile (60/40)

As shown in Fig. 2, SUMICHIRAL™ OA-7000 with sugar spacer part may have significantly improved enantiomeric resolution ability and peak shape compared to the conventional cyclodextrin stationary phases. It is speculated that the part of the sugar spacer is involved in some enantiomeric discrimination, and that the highly polar spacer site containing the amide group shields the secondary interaction between silica gel and the sample.

2. Cresol

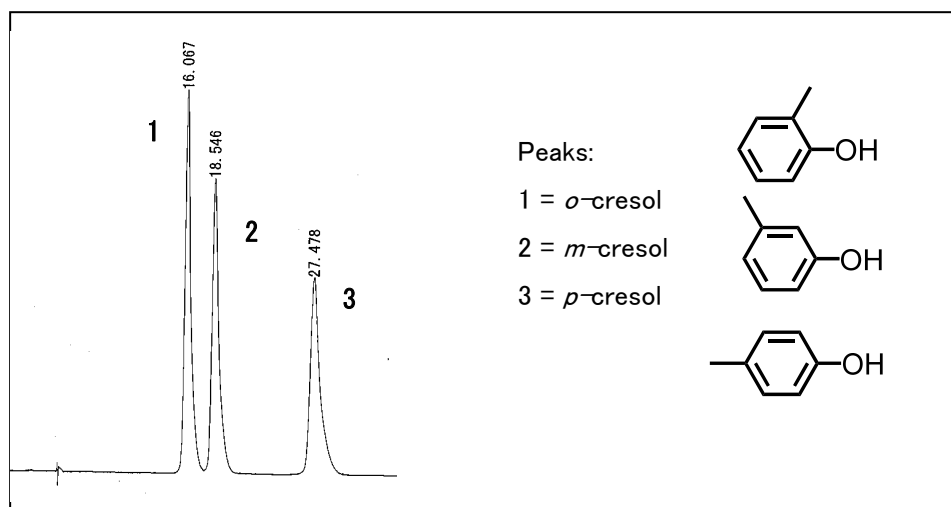


Fig. 3 Separation of *o*-, *m*-, *p*-cresol on SUMICHIRAL™ OA-7000
Mobile phase : 20 mM phosphate buffer (pH 3.0) / acetonitrile (90/10)

As shown in Fig. 3, OA-7000 can also be applied to the separation of positional isomers of disubstituted benzene.