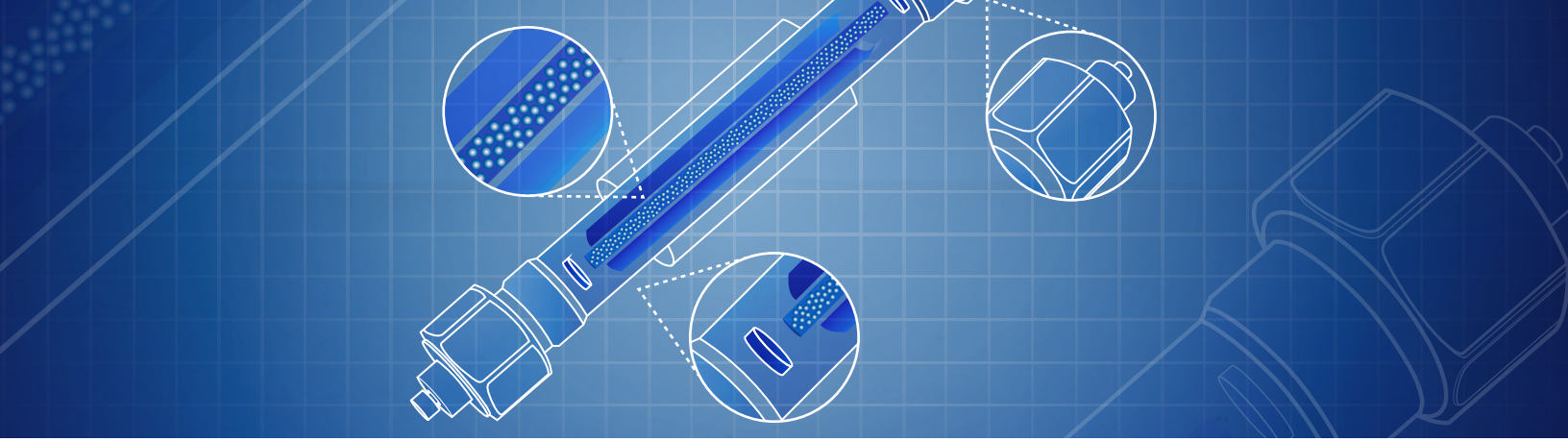


# SEPARATION OF FREE AMINO ACIDS AND PRIMARY AMINES USING DAICEL **CROWN ETHER COLUMNS: CROWNPAK CR-I(+) AND CROWNPAK CR-I(-)**

## APPLICATION NOTE

### INTRODUCTION

Daicel Corporation recently introduced a new generation of CROWNPAK® chiral selectors that can be used for the separation of free amino acids and primary amines: CROWNPAK CR-I(+) and CR-I(-). These crown ether selectors are immobilized on 5-µm silica support. Immobilization allows use of organic solvents in a wider range for both reversed-phase and normal-phase chromatography modes, thus, enhancing enantioselective resolution of chiral compounds in a shorter analysis time.

The CROWNPAK CR-I(+) and CR-I(-) chiral selectors are complementary to our CHIRALPAK® ZWIX chiral selectors. The complementarity provides a total solution for enantiorecognition of a wide variety of amino acids. For example, CR-I selectors afford challenging separations of asparagine, glutamine and serine.

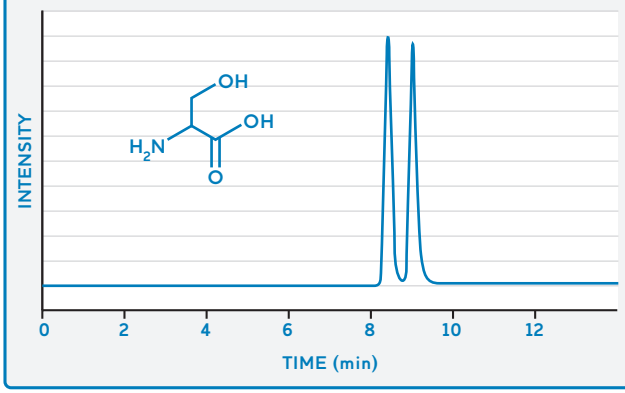
One important feature of both CHIRALPAK ZWIX and CROWNPAK CR-I chiral selectors is the ability to control the elution order. Typically, use of ZWIX(+) and CR-I(+) columns would lead to the reversal of the elution order for free amino acids eluted from ZWIX(-) and CR-I(-) columns.

### EXPERIMENTAL AND DISCUSSION

A CROWNPAK CR-I(+) column, 3.0 mm i.d. x 150 mm, packed with 5-µm particles was used to develop the separation of DL-serine. The mobile phase was a mixture of perchloric acid and acetonitrile.

The CR-I(+) and CR-I(-) selectors are packed in columns of 3.0 mm i.d. and 150 mm long.

**SEPARATION OF DL-SERINE ON CROWNPAK CR-I(+)**




## CHROMATOGRAPHIC CONDITIONS

| | |
|---|---|
| **Column Size:** | Daicel CROWNPAK CR-I(+)<br>3.0 mm i.d. x 150 mm long, 5-µm |
| **Mobile Phase:** | $HClO_4$ a.q.(pH1.0) / ACN=85/15(v/v) |
| **Flow Rate:** | 0.1 ml/min |
| **UV Detection:** | 200 nm |
| **Column Temperature:** | 25 °C |

***Note:*** *Recent scientific studies have demonstrated that the brain of Alzheimer's disease patients contain unusually high levels of D-serine. The potential association of the D-serine level with cognitive decline in the patients may lead to the development of a novel and effective biomarker for early detection of the disease.*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