

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- μ m 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 enantio-recognition of a wide variety of amino acids. For example, CR-I selectors afford challenging separations of asparagine, glutamine and serine.

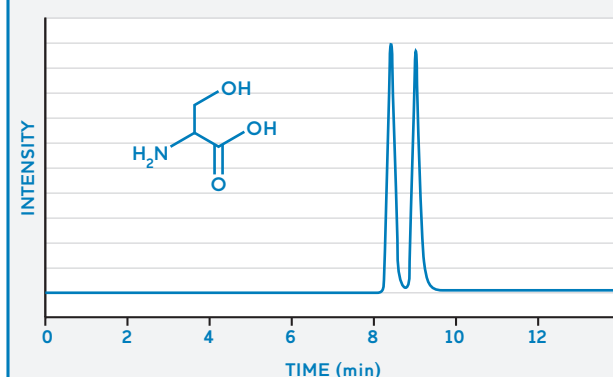
One important feature of both CHIRALPAK ZWIX and CROWNPAK CR-I chiral selectors is the ability to control the elution order. Typically, use of ZWIX(+)⁺ and CR-I(+)⁺ columns would lead to the reversal of the elution order for free amino acids eluted from ZWIX(-)⁻ and CR-I(-)⁻ columns.

EXPERIMENTAL AND DISCUSSION

A CROWNPAK CR-I(+)⁺ column, 3.0 mm i.d. x 150 mm, packed with 5- μ m 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(+)⁺
3.0 mm i.d. x 150 mm long, 5- μ m
- Mobile Phase:** HClO₄ 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.



CHIRAL TECHNOLOGIES, INC.

800 North Five Points Road
West Chester, PA 19380 USA
Tel: 610-594-2100
Fax: 610-594-2325
www.chiraltech.com
email: chiral@chiraltech.com

CHIRAL TECHNOLOGIES EUROPE

Parc d'Innovation, Bd Gonther d'Andernach
67404 Illkirch Cedex, France
Tel: +33 (0) 388 79 52 00
Fax: +33 (0) 388 66 71 66
www.chiraltech.com
e-mail: cte@chiral.fr

