

# MERCK ChiraDex®

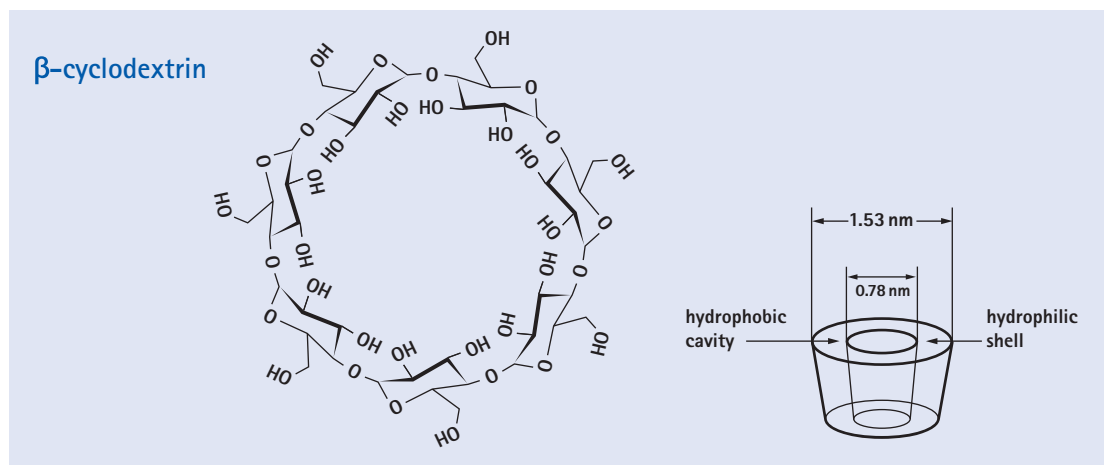
Specially for the separation of enantiomers

ChiraDex® is a versatile HPLC column characterized by broad enantioselectivity and can be used for the separation of enantiomers of numerous different classes of substances. ChiraDex® is based on beta-cyclodextrin covalently linked to spherical particles of silica and is well suited for the chiral separation of hydrocarbons, steroids, phenol esters and derivatives, aromatic amines, heterocycles with 5-membered ring to 7-membered ring. Simply composed RP-eluents can be used in most separations.

## Characterization of ChiraDex®

ChiraDex® is characterized by broad enantioselectivity and can be used for the separation of enantiomers of numerous different classes of substances. Cyclodextrins are cyclic oligosaccharins consisting of  $\alpha$ -1,4-glycosidically linked D-glucose units.  $\beta$ -cyclodextrin consist of 7 glucose units, respectively. Geometrically seen, cyclodextrins may be described as truncated cones, where all the secondary hydroxy groups are directed towards the larger opening, whereas the smaller opening at the other end is formed by primary hydroxy groups.

Thus, a hydrophobic inner cavity results, contrasting with the two hydrophilic openings. Since cyclodextrins are made up of chiral D-glucose units, its structure may be regarded as a chiral selector. The enantiomers of a racemic substance mixture, due to their opposite configurations, can now be associated – to different degrees – with the cyclodextrin molecule. Thus, diastereomeric "inclusion complexes" are formed, based on hydrophobic interaction (between cavity and guest molecule) and stereo selective hydrogen bonds (between the C2 and C3 hydrogen groups of glucose molecules and the guest molecule).



## Specifications of ChiraDex®

|                         |   |
|-------------------------|---|
| Sorbent characteristics | Spherical silica particles with covalently bonded beta-cyclodextrin particles |
| Particle shape          | spherical   |
| Particle size           | 5 $\mu\text{m}$   |
| Efficiency              | >25 000 N/m   |
| HighResolution          | >37 000 N/m   |
| Pore size               | 10 nm (100 $\text{\AA}$ )   |
| Spec. surface area      | 300 – 360 $\text{m}^2/\text{g}$   |
| Chiral selector         | Beta-cyclodextrin   |
| pH range                | pH 3 – 7.5  |
| Shipping eluent         | Methanol/Water  |

### Accessories for particulate HPLC columns:

- ▶ manu-CART® cartridge holder for LiChroCART® cartridges

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- ▶ LiChroCART® cartridge Different lengths, different internal diameter

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## Ordering information – ChiraDex®, stainless steel columns Hibar®

| Product   | Ordering No. | Particle size | Dimension length | Dimension i.d. | Contents of one package |
|-----------|--------------|---------------|------------------|----------------|-------------------------|
| ChiraDex® | 1.50013.7004 | 5 µm          | 100 mm           | 4.6 mm         | 1 piece                 |

The Hibar® columns are complete with endfittings. When using a guard column with a Hibar® column, we recommend part number 1.51487.0001 guard column cartridge holder for 4–4 mm guard column cartridges LiChroCART®. Additional dimensions available as customized packings see page 366.

## Ordering information – ChiraDex®, stainless steel cartridges LiChroCART®

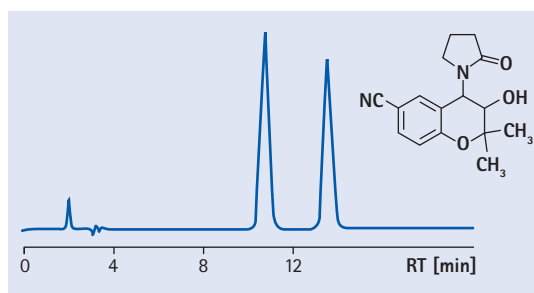
| Product                  | Ordering No. | Particle size | Dimension length | Dimension i.d. | Contents of one package |
|--------------------------|--------------|---------------|------------------|----------------|-------------------------|
| ChiraDex®                | 1.50117.0001 | 5 µm          | 4 mm             | 4 mm           | 10 pieces               |
| ChiraDex®                | 1.51333.0001 | 5 µm          | 250 mm           | 4 mm           | 1 piece                 |
| ChiraDex® HighResolution | 1.51000.0001 | 5 µm          | 250 mm           | 4 mm           | 1 piece                 |

The LiChroCART® columns in the list above require part number 1.51486.0001 manu-CART® cartridge column holder, which can be used to hold one cartridge column with or without a 4–4 mm guard column.

## Separation examples of chiral pharmaceutical active ingredients on ChiraDex®

## Cromakalim

|              |                                |
|--------------|--------------------------------|
| Column       | LiChroCART® 250-4<br>ChiraDex® |
| Mobile phase | Water/Methanol 80/20 (v/v)     |
| Flow rate    | 0.8 mL/min                     |
| Detection    | UV 254 nm                      |



## Selectivity with Sertraline

|                  |  |
|------------------|--|
| Column           | LiChroCART® 250-4<br>ChiraDex® HighResolution                                    |
| Mobile phase     | Acetonitril/10 mM Phosphat buffer adjusted with Triethylamin to pH=7.0 30/70 v/v |
| Flow rate        | 0.6 mL/min   |
| Detection        | UV 220 nm  |
| Injection volume | 5 µL   |
| Sample           | 1 mg/mL Sertraline   |

