

# APPLICATIONS

## Chiral Separation of Thalidomide with a Lux<sup>®</sup> i-Amylose-3 Chiral Stationary Phase by HPLC under General Polar Organic Mobile Phase Conditions

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### Overview

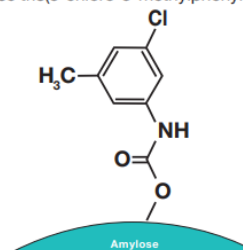
In this application, are the details for the separation of a racemic mixture of Thalidomide, using a Lux i-Amylose-3 immobilized polysaccharide chiral LC column and an under polar organic mobile phase conditions. The pharmacological difference between the enantiomers of (S) vs. (R)-thalidomide became apparent as the molecule was marketed for its antiemetic effects, because it was later determined that while the (S) form of thalidomide had the desired antiemetic effect, the (R)-(-)-thalidomide enantiomer was causing phocomelia syndrome in infants. This discovery that different enantiomers could have drastically different biological effects/side-effects increased interest in the development of efficient methods to separate the two enantiomers. A general screening polar organic mobile phase, which consisted of Acetonitrile with 0.1 % Diethylamine, was used on an Agilent<sup>®</sup> 1100 (Santa Clara, CA) HPLC system, with an injection volume of 10  $\mu$ L, and a flow rate of 1.0 mL/min. Under these conditions, the Lux i-Amylose-3 was able to separate a racemic mixture of Thalidomide. The Lux i-Amylose-3 chiral selector is a complementary but distinct chiral selectivity, in comparison to i-Amylose-1 and i-Cellulose-5. It combines the 5-position methyl group of the i-Amylose-3 chiral selector, with the 3-position electron-withdrawing chlorine group of the i-Cellulose-5. This selectivity combined with the strong solvent flexibility of the immobilization process promotes the broad enantioselectivity of the Lux i-Amylose-3 column.

### LC Conditions

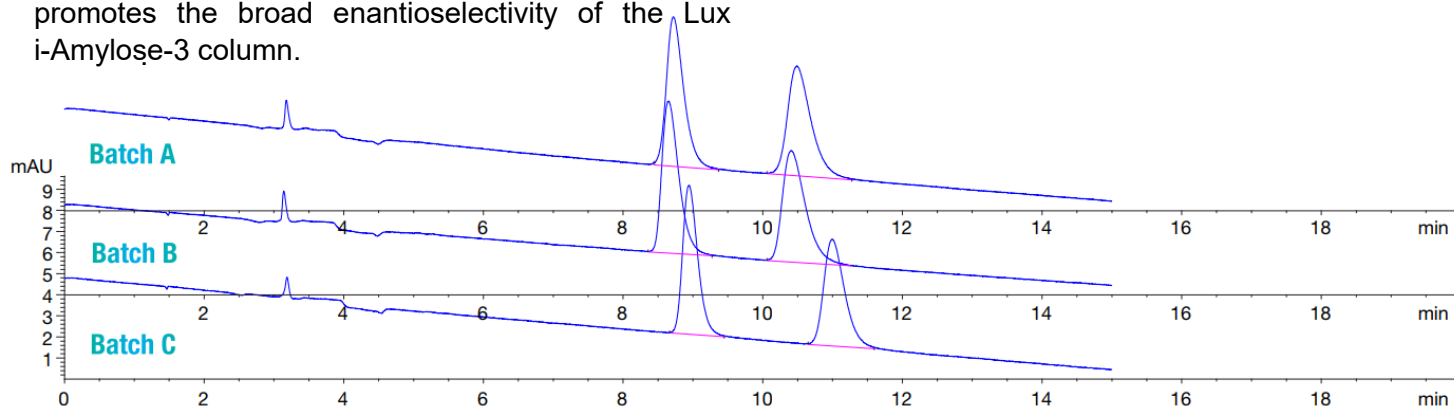
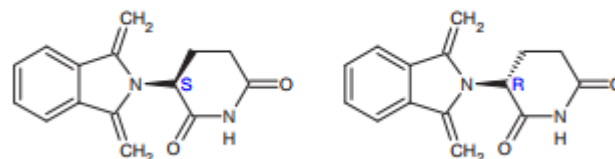
**Column:** Lux 5  $\mu$ m i-Amylose-3  
**Dimensions:** 250 x 4.6 mm  
**Part No.:** [00G-4779-E0](#)  
**Recommended Guard:** SecurityGuard<sup>™</sup>  
**Guard Holder Part No.:** [KJ0-4282](#)  
**Guard Cartridge Part No.:** [AJ0-8650](#)  
**Mobile Phase:** Acetonitrile with 0.1 % Diethylamine  
**Flow Rate:** 1.0 mL/min  
**Injection Volume:** 10  $\mu$ L (2 mg/mL)  
**Detector:** UV-Vis @ 254 nm  
**Sample:** 1. Thalidomide  
 2. Thalidomide

### Lux i-Amylose-3

Amylose tris(3-chloro-5-methylphenylcarbamate)



### Enantiomers of Thalidomide



# APPLICATIONS

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SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362

CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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