

Carotene or Lycopene - Column Suggestions - Tips and Suggestions

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Overview

Carotene and lycopene contain numerous conjugated double bonds, producing many potential cis/trans isomers. These isomers differ only slightly in hydrophobicity but significantly in molecular shape, making traditional reversed-phase columns (e.g., C8) insufficient for achieving clean separations.

Columns with shape-selective stationary phases, such as Cogent C30™ and Cogent UDC-Cholesterol™, are specifically engineered for resolving structurally similar compounds. Their stationary phases become more rigid at lower temperatures, allowing enhanced discrimination between closely related geometric isomers.

Because of this property, column temperature control becomes an important factor during method development.

♦ Why This Is Important

Understanding and selecting the correct stationary phase helps analysts:

1. Resolve complex isomeric mixtures that cannot be separated using standard reversed-phase phases.
2. Improve resolution and selectivity when analyzing carotenoids, lipid derivatives, and other long-chain compounds.
3. Leverage temperature-dependent rigidity for fine-tuning separations.
4. Increase method robustness by using columns engineered specifically for shape-selective applications.

Correct column choice dramatically increases both the quality and reliability of carotenoid analyses.

When separating carotene, lycopene, and related carotenoid compounds, the most effective choices are the **Cogent C30™** or **Cogent UDC-Cholesterol™** columns. These compounds contain multiple double bonds, resulting in many possible cis/trans isomers, which often differ more in shape than in hydrophobicity.

Standard reversed-phase columns, such as C8, generally lack the shape-selective capabilities needed for adequate separation. The Cogent C30™ column incorporates long alkyl chains that adopt a more rigid structure at lower temperatures. This increased rigidity enhances shape recognition and improves separation of geometric isomers.

Similarly, the Cogent UDC-Cholesterol™ column features a cholesterol-based ligand that also becomes more rigid as temperature decreases, providing notable improvements in isomer resolution. Because both phases rely on temperature-dependent rigidity, the method should include proper thermostatted column control to maintain consistency and robustness.

Both column types offer excellent selectivity for carotenoid isomers and are strongly recommended for these analytes.

- [Cogent C30 HPLC Column Ordering Information](#)
- [Cogent UDC-Cholesterol HPLC Column Ordering Information](#)



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MicroSolv Technology Corporation

9158 Industrial Blvd. NE, Leland, NC 28451

Tel: (732) 380-8900

Fax: (910) 769-9435

Email: customers@mtc-usa.com

Website: www.mtc-usa.com