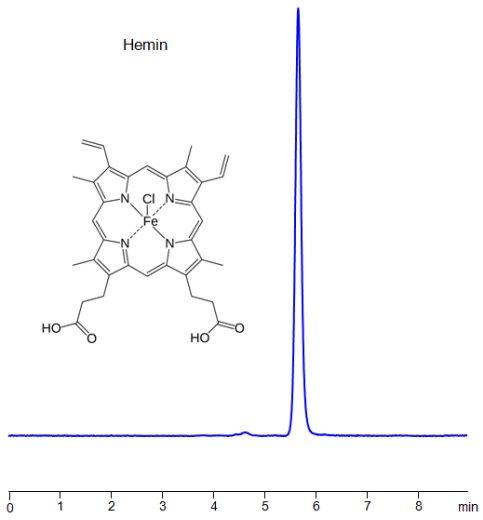
## HPLC Method for Analysis of Hemin on Primesep 100 Column

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|---|---|
| **Column**: | Primesep 100 |
| **Column size:** | 4.6 × 150 mm, 5 µm |
| **Column part number:** | 100-46.150.0510 |
| **Mobile phase:** | MeCN/$H_2O$ – 70/30% |
| **Buffer:** | $H_2SO_4$ - 0.2% |
| **Flow rate:** | 1.0 mL/min |
| **Detection:** | UV 393 nm |

Separation type: Liquid Chromatography Mixed-mode

Hemin is an iron-containing molecule related to hemoglobin and myoglobin, proteins that carry oxygen in blood and muscle, respectively. Specifically, hemin is the ferric (Fe^3+) form of protoporphyrin IX.

Structure: Hemin consists of a protoporphyrin IX ring with a centrally coordinated ferric (Fe^3+) ion. This structure is similar to the heme group found in hemoglobin, myoglobin, and various other heme-containing proteins. The difference between heme and hemin is the oxidation state of the iron and the type of ligands it is bound to.

Biological Role: While hemin itself isn't a major biological molecule, its close relative, the heme group, plays a critical role in various biological processes. Heme is essential for oxygen transport in hemoglobin and myoglobin and is also a key component of many other proteins and enzymes.

Clinical Relevance: Hemin is used therapeutically as "heme therapy." It is administered to treat acute porphyria attacks. Porphyrias are a group of rare disorders resulting from a buildup of natural chemicals that produce porphyrin in your body. Administering hemin can help reduce the production of porphyrins.

Laboratory Use: Hemin can be used to induce the expression of heme-oxygenase-1 (HO-1), an enzyme that degrades heme, leading to antioxidant and anti-inflammatory effects. Additionally, in microbiology, hemin is used as a factor to grow certain bacteria like Haemophilus influenzae on chocolate agar.

Hemin can be retained and analyzed using a mixed-mode Primesep 100 column. The mobile phase consists of water, acetonitrile (MeCN), and sulfuric acid (H2SO4). This analytical method allows for UV detection at 393 nm, ensuring high resolution and peak symmetry

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*LOD was determined for this combination of instrument, method, and analyte, and it can vary from one laboratory to another even when the same general type of analysis is being performed.

## Method Parameters

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|---|---|
| **Column** | Primesep 100, 4.6 x 150 mm, 5 µm, 100 Å, dual ended |
| **Mobile Phase** | MeCN – 70% |
| **Buffer** | H2SO4 – 0.2% |
| **Flow Rate** | 1.0 mL/min |
| **Detection** | UV 393 nm |
| **Sample** | 1 mg/ml in 0.01M NaOH |

Quelle: https://sielc.com/hplc-determination-of-hemin