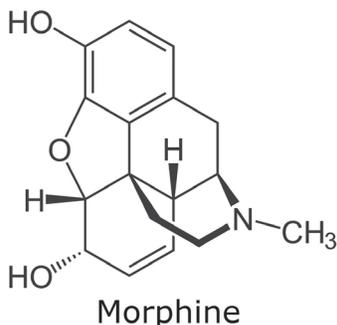
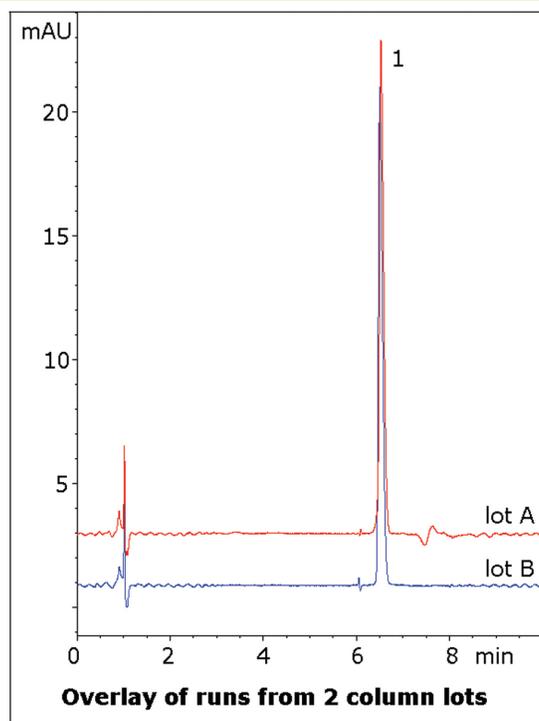


Morphine Sulfate Tablet

Excellent peak shape for tertiary amine



Note: Morphine is a highly potent opiate analgesic widely used in clinical applications to treat severe pain. However, tolerance and addiction develop rapidly with its use so it has potential for abuse as well. It is named after Morpheus, the Greek god of dreams.

Method Conditions

Column: Cogent Diamond Hydride™, 4µm, 100Å

Catalog No.: 70000-7.5P

Dimensions: 4.6 x 75 mm

Mobile Phase: A: DI H₂O / 0.1% formic acid (v/v)
B: Acetonitrile / 0.1% formic acid (v/v)

Gradient:	time (min.)	%B
	0	90
	1	90
	6	40
	7	90

Post Time: 3 min

Injection vol.: 1µL

Flow rate: 1.0 mL/min

Detection: UV 284 nm

Sample: 15mg strength morphine sulfate tablet was ground and weighed in a 25mL volumetric flask. A portion of 50/50 solvent A/solvent B diluent was added and the flask was sonicated 10 min. It was then diluted to mark and filtered with a 0.45µm nylon syringe filter (MicroSolv Tech Corp.).

Peak: 1. Morphine sulfate

t₀: 0.9 min

Discussion

Morphine can be a very problematic compound for analysis by HPLC. It has a tertiary amine and has a tendency to tail under some conditions. USP assay methodology uses phosphates, alkylsulfonates, or other LC-MS incompatible agents in the mobile phase. This method uses only formic acid and can be readily adapted for LC-MS. As such, analysis of morphine in blood samples can be achieved with excellent retention and peak shape. The Cogent Diamond Hydride column has been shown to produce consistent lot-to-lot retention as well (see Figure overlay).