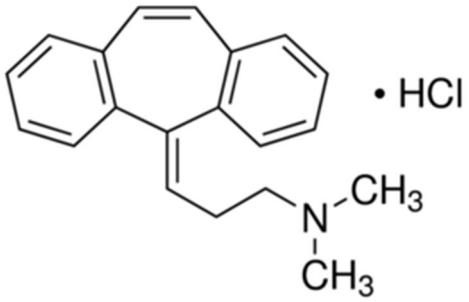
Cyclobenzaprine HCl
5 mg Tablets

Structure:



Molecular Formula and Mass: $C_{20}H_{21}N$•HCl – 311.853
Category: Muscle relaxant
Sample:

Grind one tablet and dissolve in 30.0 mL of methanol. Shake for at least 10 min and filter. Final concentration of sample solutions = 0.167 mg/mL, which is the required concentration representing 100%.

Standards:

High Standard:

The high limit is 115%; therefore, the concentration of the high standard = 0.167 mg/mL × 1.15 = 0.192 mg/mL. Weigh approximately 19.2 mg of standard and dissolve it in 100 mL methanol. If you weighed 19.3 mg of standard, dissolve it in: 19.3 mg ÷ 0.192 mg/mL = 101 mL of methanol. This makes the high standard solution concentration equal to 0.192 mg/mL, which is 115%.

Low Standard:

The low limit is 85%; therefore, the concentration of the low standard = 0.167 mg/mL × 0.85 = 0.142 mg/mL. Dilute 7.40 mL of high standard to 10.0 mL by adding 2.60 mL of methanol. This gives a concentration of 0.192 mg/mL × 7.40 mL ÷ 10.0 mL = 0.142 mg/mL, which is 85.0%.

Spotting:

Spot on the 5 × 10 cm silica gel TLC aluminum plate with 3.00 µL aliquots as follows:

Left spot	low standard (85%) = 0.426 µg
Center Spot	100% sample = 0.501 µg
Right Spot	high standard (115%) = 0.576 µg

Development:

Mix 16.0 mL of toluene, 8.00 mL of ethyl acetate, 14.0 mL of methanol, and 2.00 mL of acetic acid. Develop the plate in a small glass chamber with approximately 20.0 mL of this solution until the solvent front reaches within 1 cm of the top of the TLC plate.

(R_f = 0.20)

Detection:

UV:

Dry the plate and observe under ultraviolet light at 254 nm. Observe the intensities and the sizes of the spots.

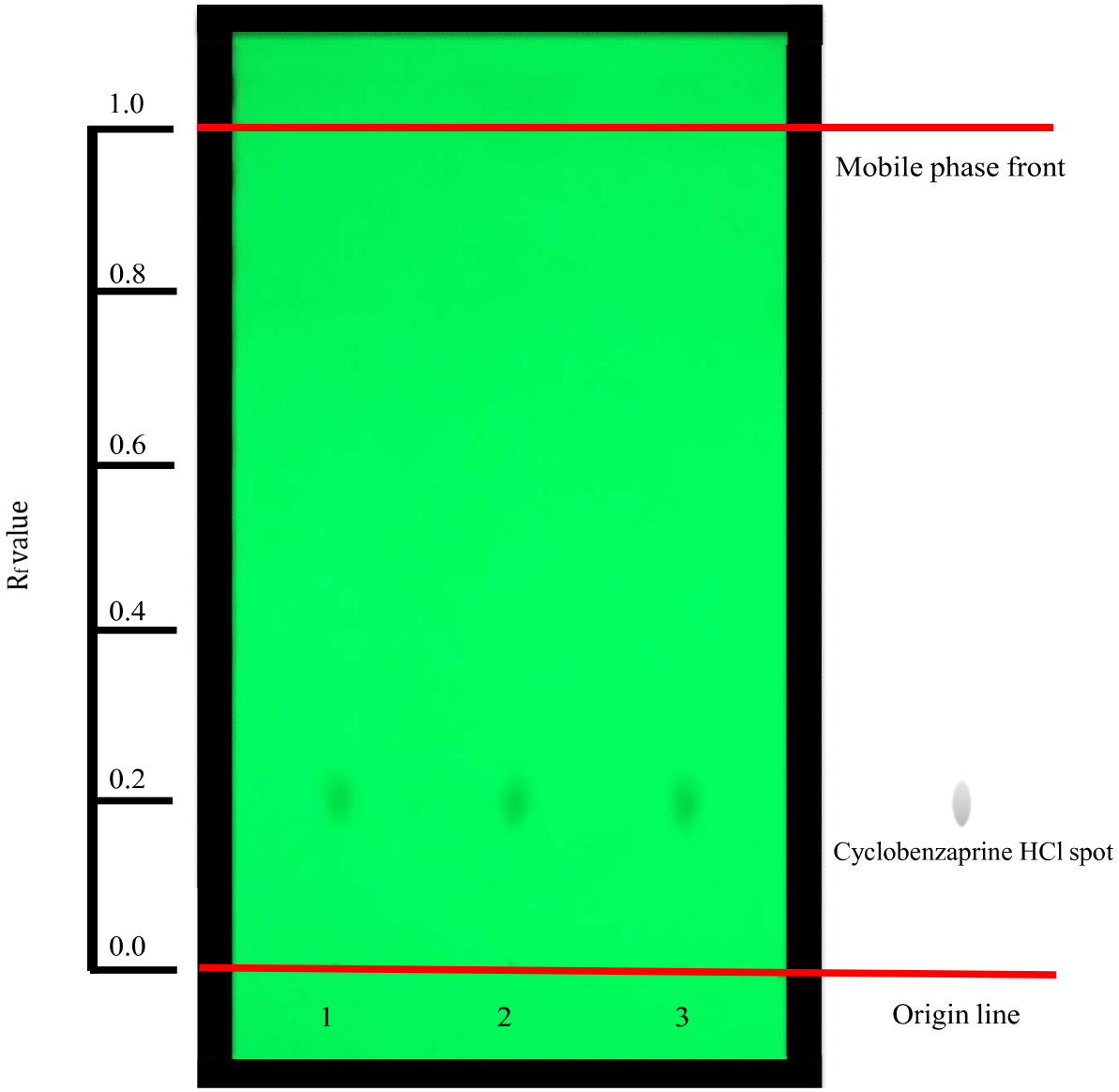


Plate observed under ultraviolet light at 254 nm.

Lane 1: Low standard (85%) = 0.426 µg

Lane 2: 100% sample = 0.501 µg

Lane 3: High standard (115%) = 0.576 µg

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