Carvedilol
25 mg Tablet

Structure:
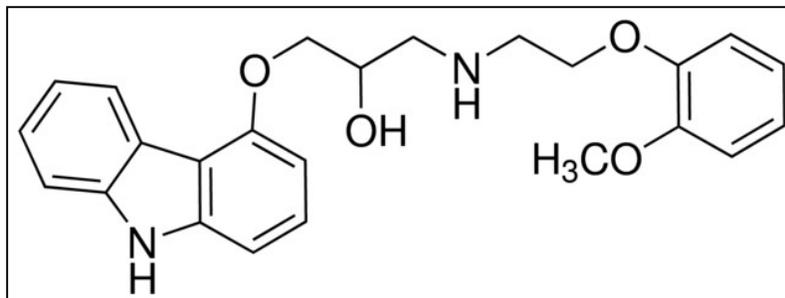
Molecular Formula and Mass: $C_{24}H_{26}N_2O_4$ – 406.47
Category: Beta-Blocker
Sample:

Grind one tablet and dissolve in 25.0 mL of methanol. Shake at least 10 min and filter. 25.0 mg/25.0 mL = 1.00 mg/mL. Dilute 1.00 mL with an additional 2.00 mL of methanol, for a total volume of 3.00 mL. Final concentration of sample solution = 1.00 mg/3.00 mL = 0.333 mg/mL, which is the required concentration representing 100%.

Standards:

Fir<u>High Standard:</u>

The high limit is 115%; therefore the concentration of the high standard = (0.333 mg/mL X 1.15 = 0.383 mg/mL. Weigh approximately 11.5 mg of standard. If you weighed 11.6 mg of standard, dissolve it in: (11.6 mg)/(0.383 mg/mL) = 30.3 mL of methanol. This makes the high standard solution concentration equal to 0.383 mg/mL.

<u>Low Standard:</u>

The low limit is 85%; therefore the concentration of the low standard = (0.333 mg/mL X 0.85 = 0.283 mg/mL. Dilute 1.00 mL of high standard to 1.35 mL by adding 0.35 mL of ethanol (1.15/0.85 = 1.35).

Spotting:

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

Left spot	low standard (85%) = 0.850 µg
Center Spot	100% sample = 1.00 µg
Right Spot	high standard (115%) = 1.15 µg

Development:

Mix 20.0 mL of ethyl acetate, 12.0 mL of toluene, 6.00 mL of methanol, and 2.00 mL of ammonium hydroxide. 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.

$$(R_f = 0.60)$$

Detection:

<u>UV:</u>

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

R_f value

1.0

0.8

0.6

0.4

0.2

0.0

Mobile phase front

Carvedilol spot

Origin line

1   2   3
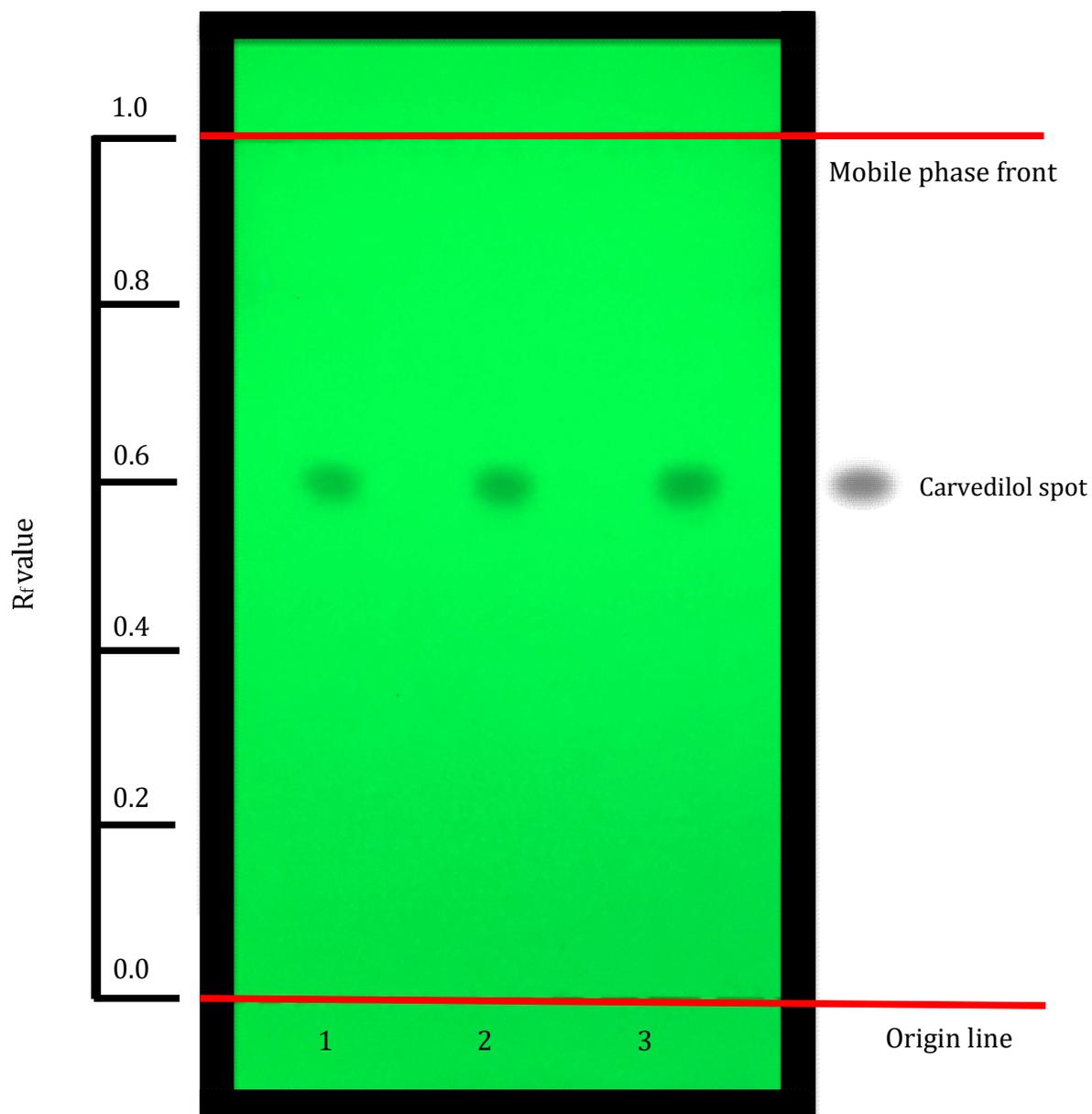
Plate observed under ultraviolet light at 254 nm

Lane 1: Low standard (85%) = 0.850 µg

Lane 2: 100% sample = 1.00 µg

Lane 3: High standard (115%) = 1.15 µg