Pantoprazole
40 mg Tablet

Structure:
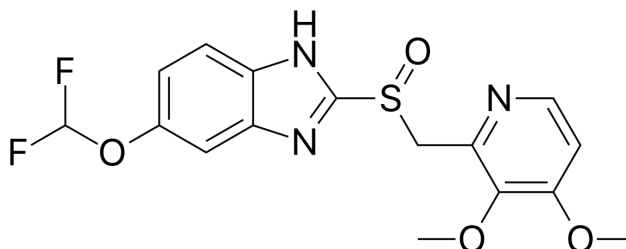
Molecular Formula and Mass: $C_{16}H_{15}F_2N_3O_4S$ - 383.37 g/mol

Category: Proton Pump Inhibitor

Sample:

Grind one tablet and dissolve in 120 mL of methanol. Shake at least 10 min and filter. 40.0 mg/120 mL = 0.333 mg/mL, which is the required concentration representing 100%.

Standards:

High Standard:

The high limit is 115%; therefore the concentration of the high standard = (0.333 mg/mL X 1.15 = 0.383 mg/mL. Weigh approximately 20.7 mg of pantoprazole or the equivalent 23.4 mg of pantoprazole sodium standard. If you weighed 20.8 mg of pantoprazole standard, dissolve it in: (20.8 mg)/(0.383 mg/mL) = 54.3 mL of methanol. This makes the high standard solution concentration equal to 0.383 mg/mL.

Low Standard:

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 methanol (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 24.0 mL of ethyl acetate, 6.00 mL of methanol, and 12.0 mL of toluene. 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.

$(R_f = 0.43)$

Detection:

UV:

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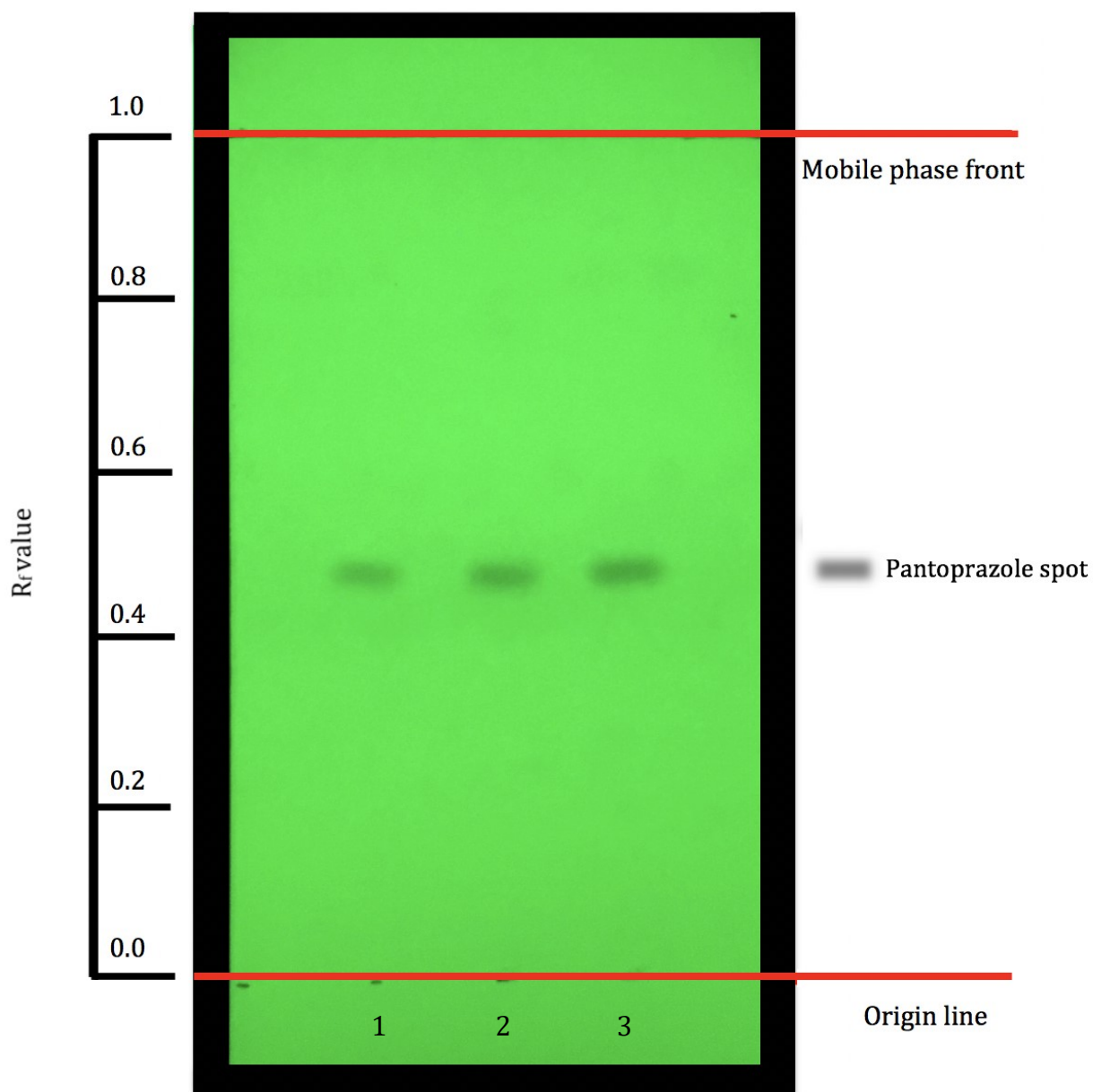
Plate observed under ultraviolet light at 254 nm

Lane 1: Low standard (85%) = 0.850 µg
Lane 2: 100% sample = 1.00 µg
Lane 3: High standard (115%) = 1.15 µg

Developed and tested by Kaitlin Nguyen and Joseph Sherma

Department of Chemistry, Lafayette College, Easton, PA, USA

October 2018