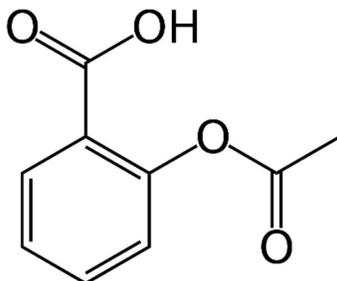


**Acetylsalicylic acid**  
**250 mg Tablet**  
**Co-formulated with 250 mg Acetaminophen and 65 mg Caffeine**

**Structure:**



**Molecular Formula and Mass:** C<sub>9</sub>H<sub>8</sub>O<sub>4</sub> – 180.158

**Category:** Nonsteroidal anti-inflammatory drug

**Sample:**

Grind one tablet and dissolve in 100 mL of methanol. Shake for at least 10 min and filter. Final concentration of the sample solution is 2.50 mg/mL, which is the required concentration representing 100%.

**Standards:**

High Standard:

The high limit is 115%; therefore the concentration of the high standard is 2.50 mg/mL × 115% = 2.88 mg/mL. Weigh approximately 71.9 mg of standard and dissolve it in 25.0 mL of methanol. If you weighed 72.0 mg of standard, dissolve it in: 72.0 mg ÷ 2.88 mg/mL = 25.0 mL of methanol. This makes the high standard solution concentration equal to 2.88 mg/mL, which is 115%.

Low Standard:

The low limit is 85%; therefore the concentration of the low standard = 2.50 mg/mL × 85% = 2.13 mg/mL. Dilute 1.70 mL of high standard to 2.30 mL by adding 0.60 mL of methanol. This gives a concentration of 2.88 mg/mL × 1.70 mL ÷ 2.30 mL = 2.13 mg/mL, which is 85%.

**Spotting:**

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

Left spot	low standard (85%) = 6.39 µg
Center Spot	100% sample = 7.50 µg
Right Spot	high standard (115%) = 8.64 µg

**Development:**

Mix 38.0 mL of ethyl acetate 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<sub>f</sub> = 0.57)

**Detection:**

UV:

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

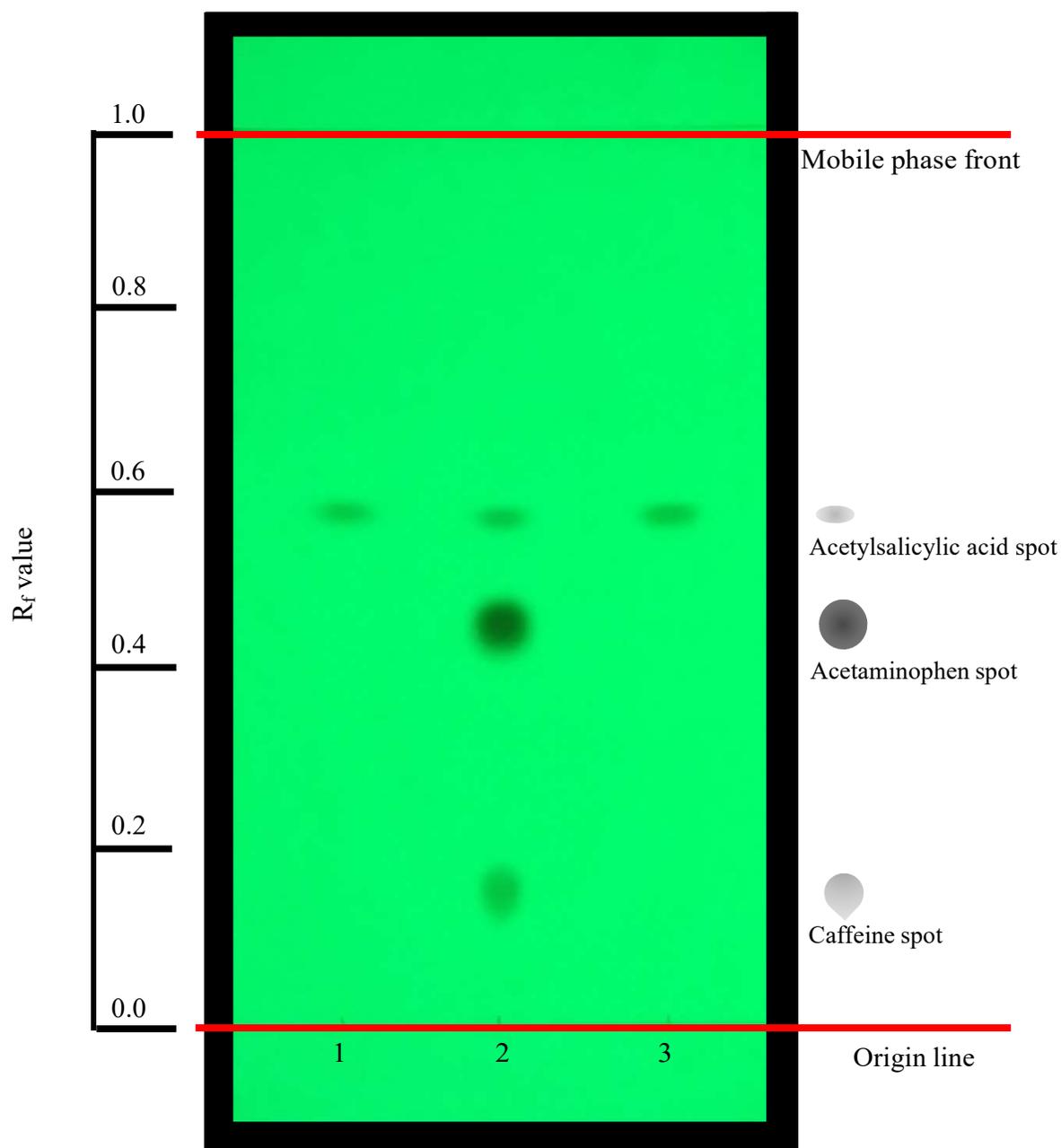


Plate observed under ultraviolet light at 254 nm.

Lane 1: Low standard (85%) = 6.39  $\mu\text{g}$

Lane 2: 100% sample = 7.50  $\mu\text{g}$

Lane 3: High standard (115%) = 8.64  $\mu\text{g}$

Developed and tested by Bingsong Zeng, Yiru Gu, and Joseph Sherma

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