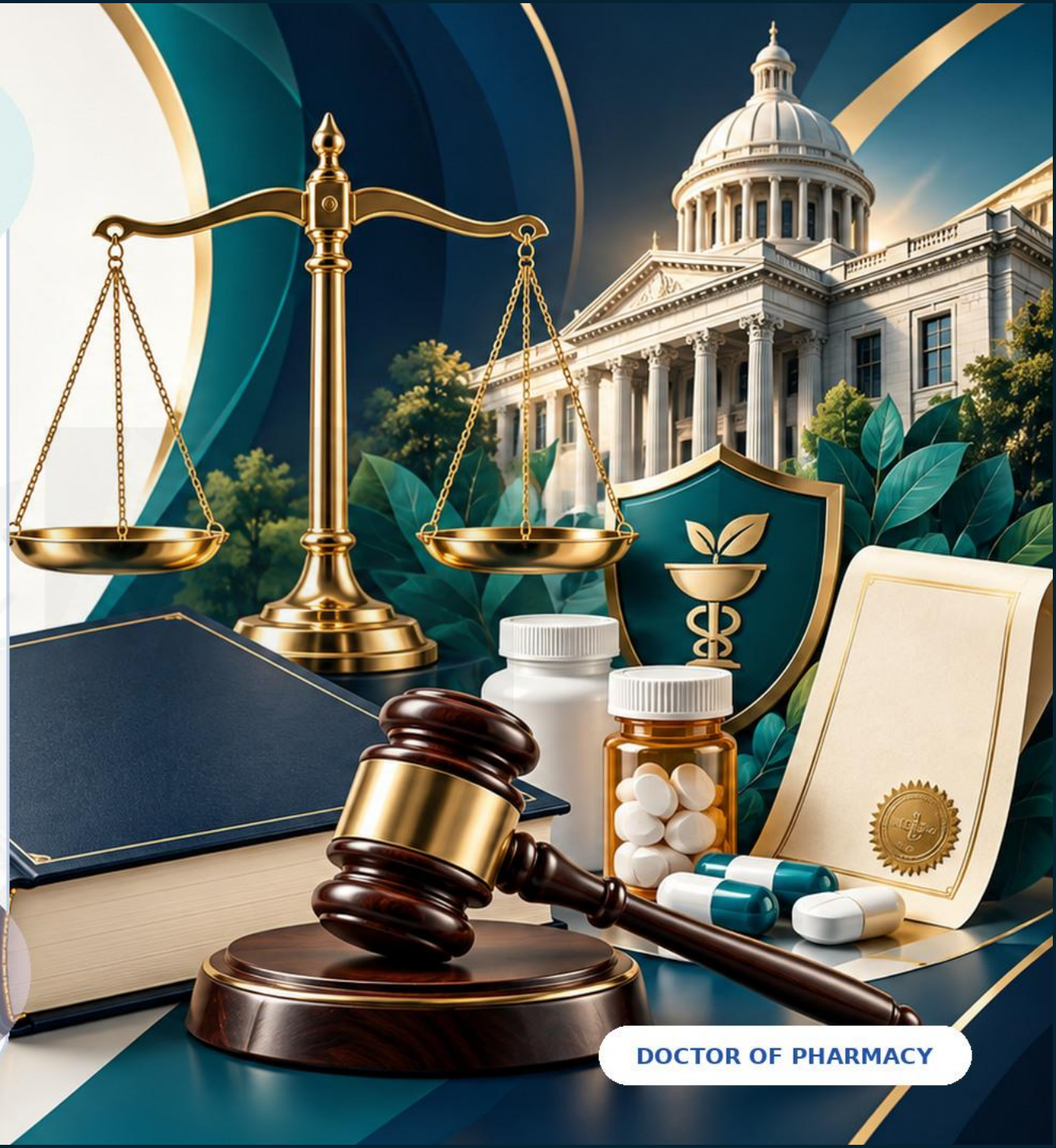
PHARM.D • YEAR 3

Pharmaceutical Analysis

CHAPTER 2.2

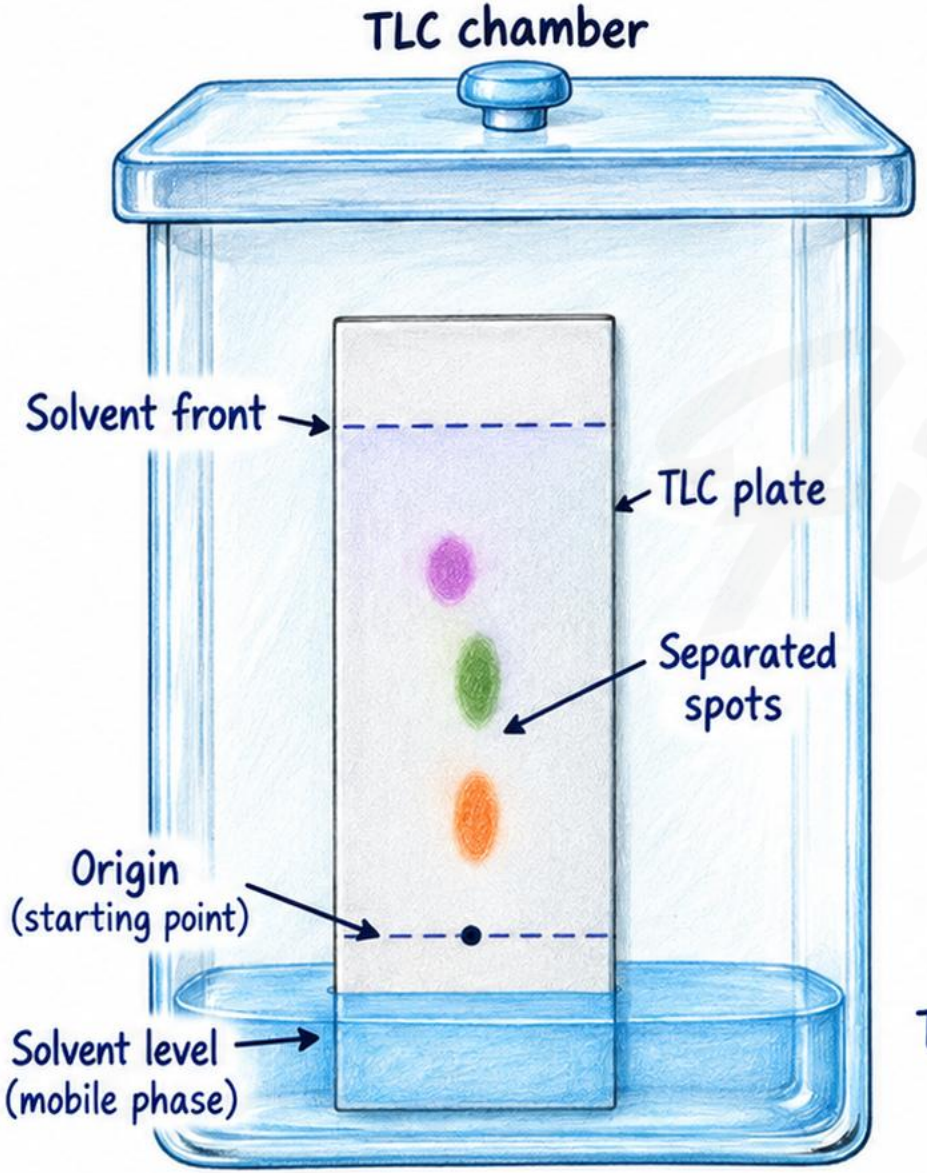
Thin Layer Chromatography (TLC)

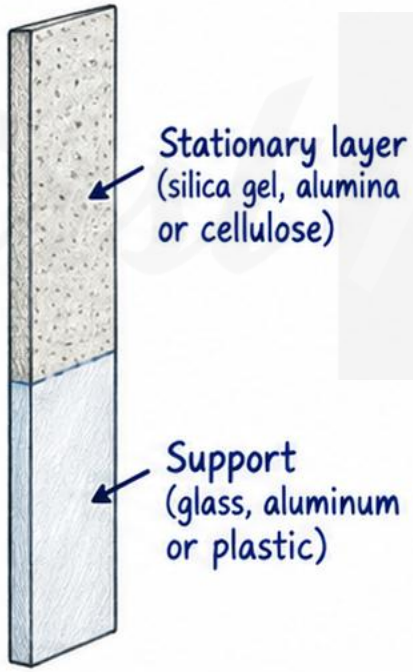
PPT CHAPTER COVER



DOCTOR OF PHARMACY

THIN-LAYER CHROMATOGRAPHY





TLC plate (side view)

What is TLC?

Thin-layer chromatography (TLC) is a planar separation method using a thin stationary layer on glass, aluminum or plastic. A liquid mobile phase travels through the layer by capillary action. Differences in interaction with the stationary and mobile phases create separate spots.

Stationary phase (adsorbents)

- Silica gel and alumina are common adsorbents, while cellulose supports other mechanisms.

Uses of TLC

- TLC is useful for rapid identification, screening and monitoring with relatively simple equipment.

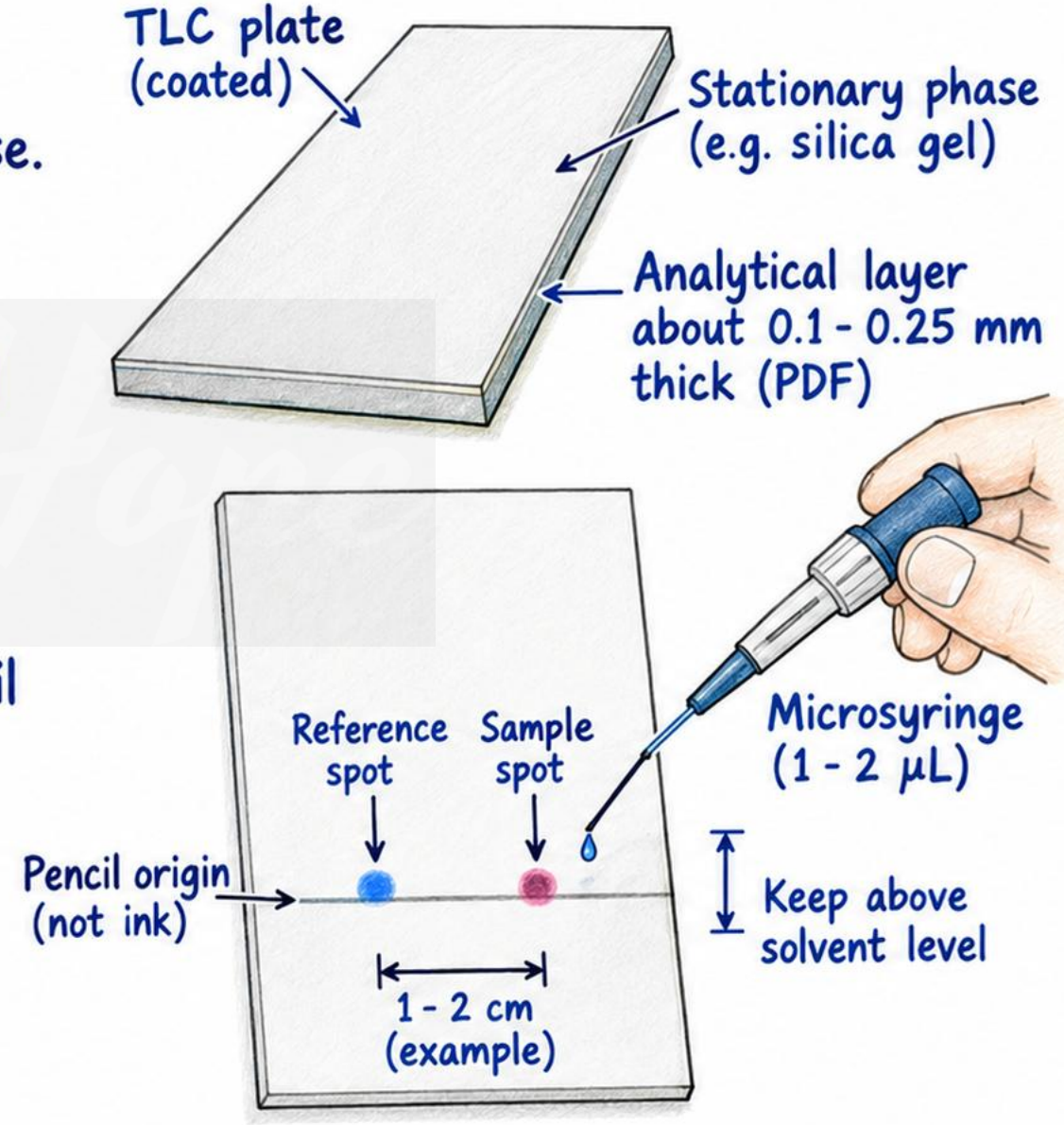
TLC PLATE PREPARATION AND SPOTTING

1. Plate preparation

- Choose a suitable coated plate and stationary phase.
- The PDF describes analytical layers about 0.1 - 0.25 mm thick.
- Activation or conditioning depends on the method and plate manufacturer.

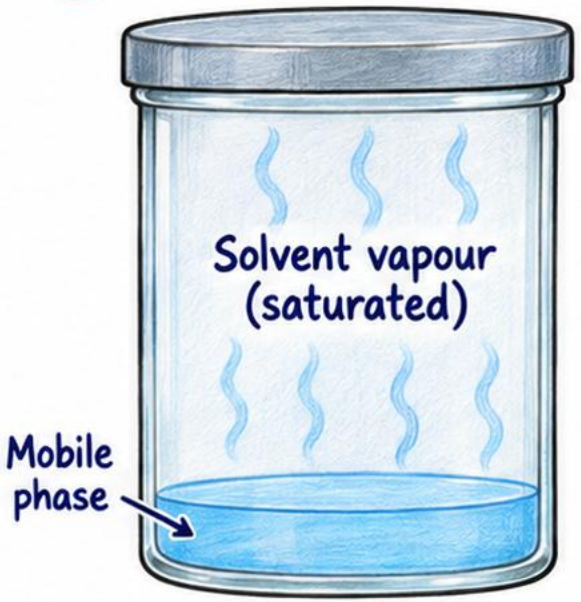
2. Spotting

- Apply small sample and reference spots on a pencil origin above the solvent level.
- The PDF gives 1 - 2 µL as an example, rather than a universal loading volume.
- Dry spots between applications to keep starting zones compact and avoid overloading.



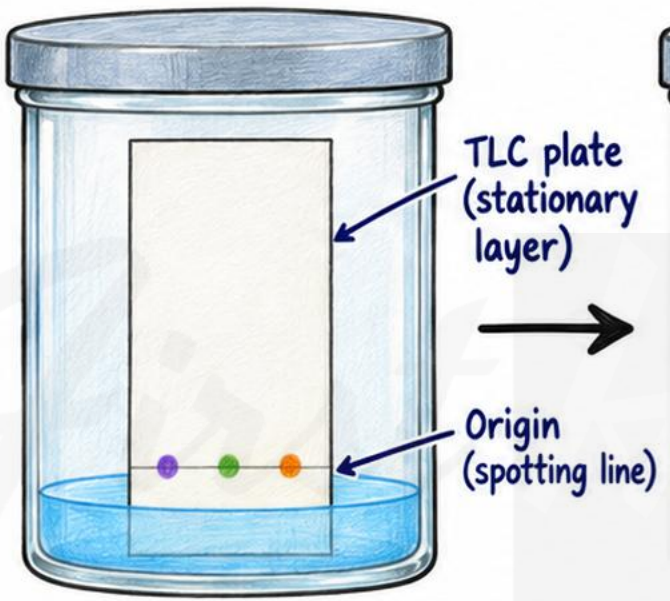
TLC DEVELOPMENT

1 Saturated chamber



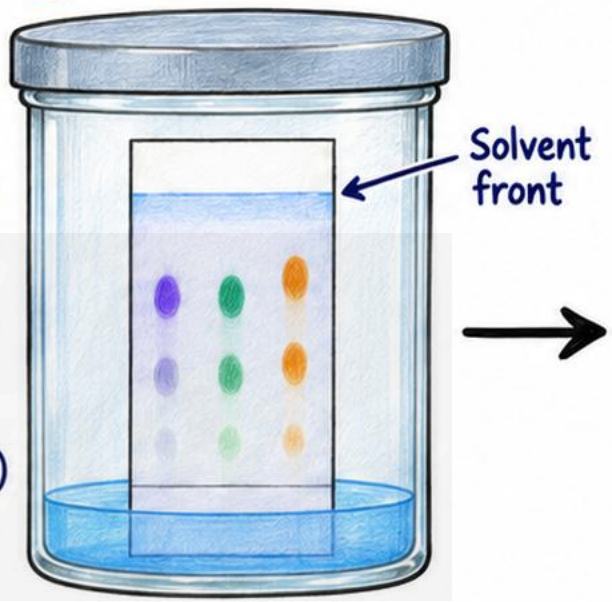
Use the specified mobile phase and a suitable covered chamber. Chamber saturation helps control evaporation and solvent migration.

2 Correct plate position



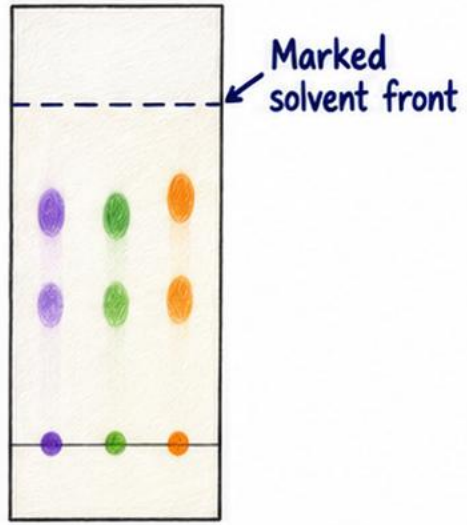
Place the plate with its origin above the liquid surface. Do not immerse the sample spots in the solvent.

3 Development



Let solvent move through the stationary layer until the defined development distance is reached.

4 Mark front



Remove the plate and mark the solvent front promptly. Dry before visualization.

Consistent chamber conditions, humidity, development distance and sample loading improve reproducibility.

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