PHARM.D • YEAR 3

Pharmaceutical Formulations

CHAPTER 4

Liquid Oral Dosage Forms

PPT CHAPTER COVER



DOCTOR OF PHARMACY

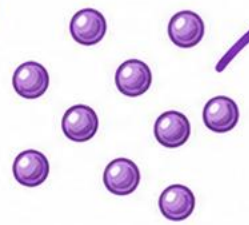
ORAL SOLUTIONS – CORE CONCEPT

What is it?

Clear, homogeneous liquid with drug completely dissolved in a suitable solvent system (usually water).

Solute (API)

Must be soluble in the vehicle.
May need pH adjustment or solubilizers.



API (dissolved)



Solvent & co-solvent

Usually purified water.
Co-solvents (e.g., ethanol, glycerin, propylene glycol) may help dissolve poorly soluble drugs.



Finished oral dose

Clear, homogeneous, palatable solution with accurate drug content per mL.

FORMULATING AN ORAL SOLUTION



1 Solubility & Compatibility

- Drug must be soluble
- May require pH adjustment or solubilizers

2 pH & Buffer

- Use buffers to maintain pH
- Optimizes solubility, stability and compatibility

3 Preservative

- Prevents microbial growth

4 Sweetener & Flavor

- Improve palatability and mask unpleasant taste

5 Antioxidant

- Helps prevent oxidation (e.g., for vitamins and alkaloids)

ORAL SUSPENSIONS – CORE CONCEPT

1) WHAT & KEY IDEA

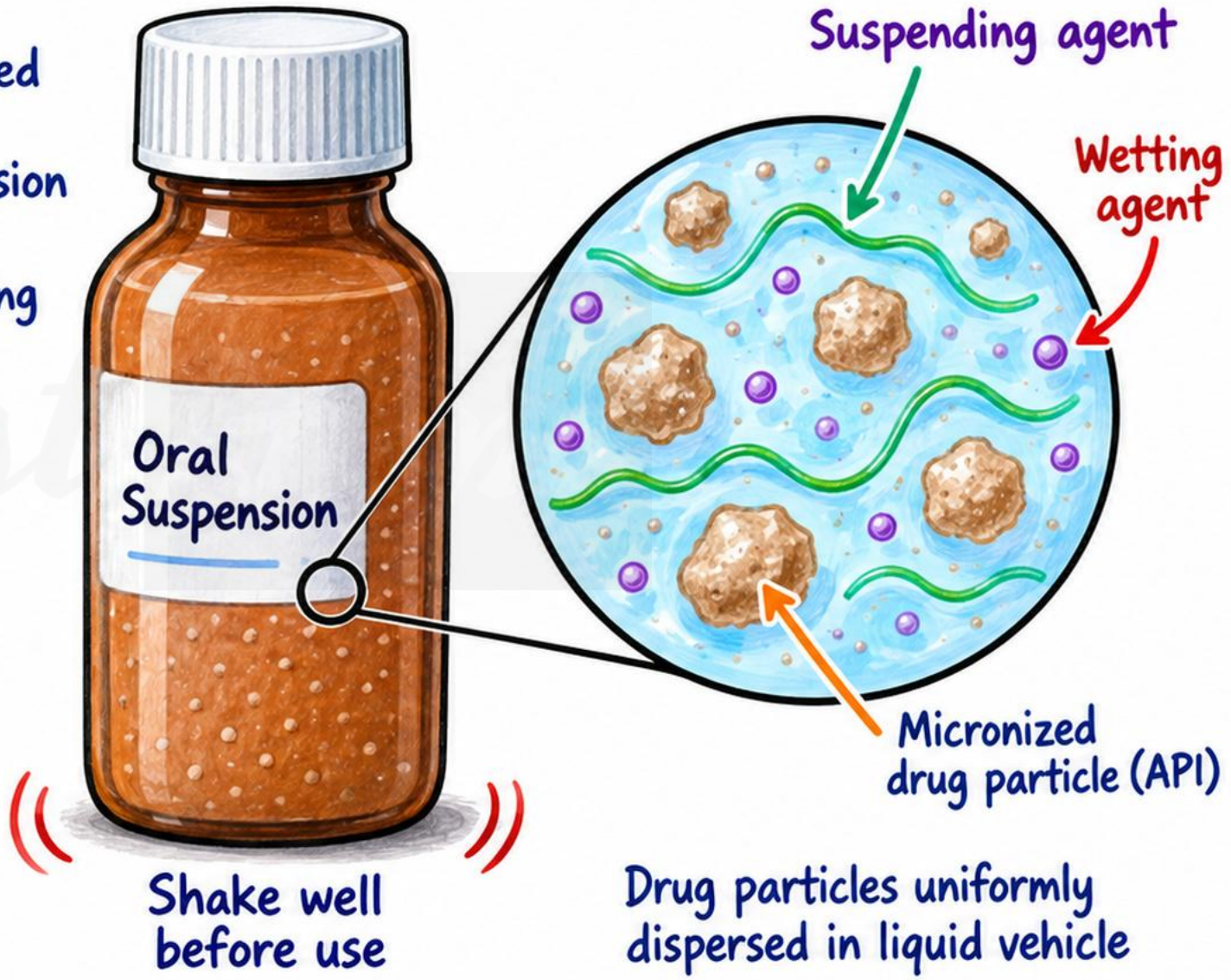
- Insoluble, micronized drug particles dispersed in a liquid vehicle.
- Suspending agents maintain uniform dispersion and reduce sedimentation.
- Dose uniformity depends on controlled settling and easy redispersion.

2) FORMULATION (KEY COMPONENTS)

- API: micronized for better dispersion.
- Suspending agent: e.g. xanthan gum.
- Wetting agent: e.g. polysorbate.
- Vehicle: usually purified water.

3) IMPORTANT TESTS

- Sedimentation volume.
- Redispersibility.
- Particle size distribution.



SUSPENSION INGREDIENTS



API (micronized)



Small particle size for better dispersion.

Wetting agents



Improve wetting of hydrophobic particles (e.g., polysorbates).

Suspending agents



Increase viscosity, maintain uniform dispersion (e.g., xanthan gum).

Flocculating agents



Form loosely bound aggregates easily redispersed.

Preservatives



Prevent microbial growth.

Sweeteners & flavouring agents



Improve palatability (taste and flavour).

Vehicle



Usually purified water.

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