PHARM.D • YEAR 3

Pharmaceutical Formulations

CHAPTER 6

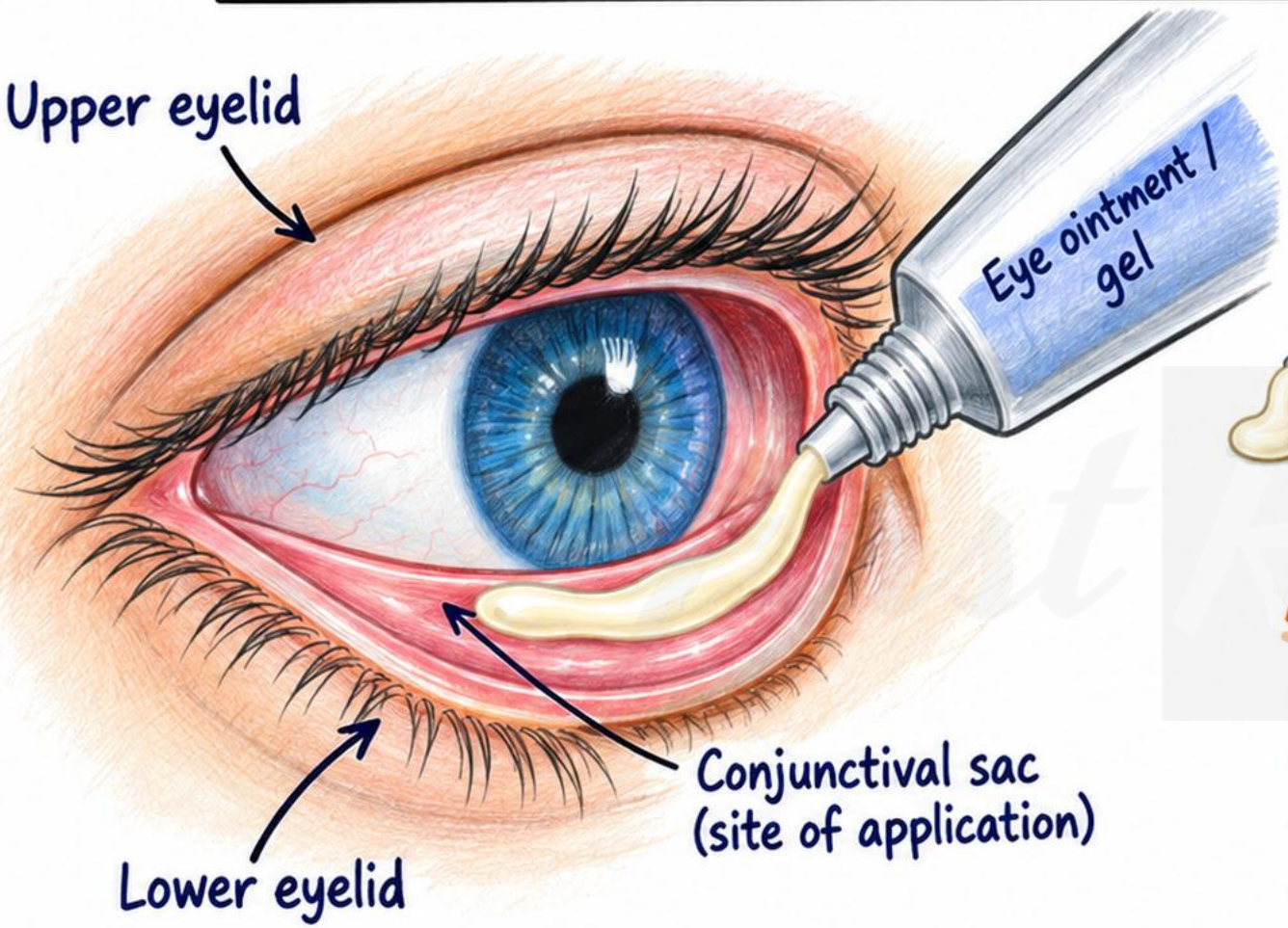
Ophthalmic and Semi-Solid Dosage Forms

PPT CHAPTER COVER



DOCTOR OF PHARMACY

OPHTHALMIC SEMI-SOLIDS — OVERVIEW



Semi-solid ophthalmic preparations:



Ointments

Gels (jellies)

Creams (rare in ophthalmics)

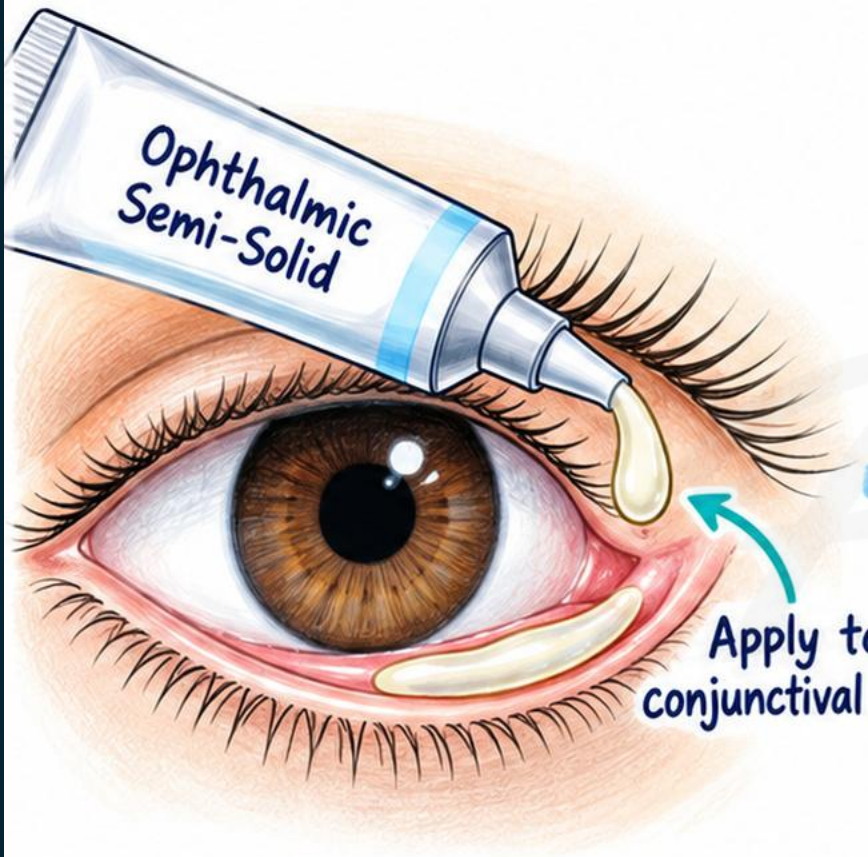
Advantages:

- Prolonged ocular contact time
- Reduced frequency of administration
- Improved bioavailability
- Better patient compliance (e.g. night use)

MUST BE:

- Sterile
- Non-irritating
- Compatible with ocular tissues
- Appropriate pH, viscosity and osmolality

OPHTHALMIC QUALITY REQUIREMENTS



Semi-solid (e.g., ointment / gel)
for sustained drug release
and longer residence time

Sterility



Must be sterile
(free from viable
microorganisms)

Smoothness / Particle Control



Free from
gritty particles;
smooth
texture

Suitable pH / Tonicity



pH and
osmolality
appropriate
for ocular tissues

Viscosity



Suitable
viscosity for
prolonged
contact time

Container Closure



Use a
compatible
container
closure system

TYPES OF OPHTHALMIC SEMI-SOLIDS

Ointments



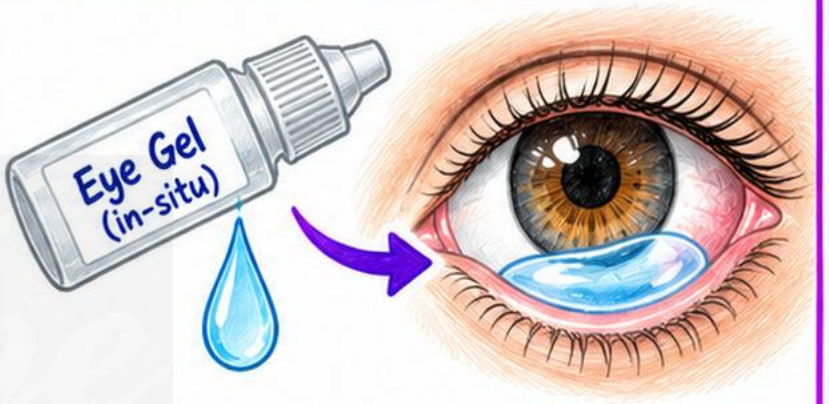
- Drug in a suitable semi-solid base.
- May prolong contact but temporarily blur vision.

Preformed gels



- A polymer network gives viscosity before application.
- Drug release depends on composition and rheology.

In-situ gelling systems

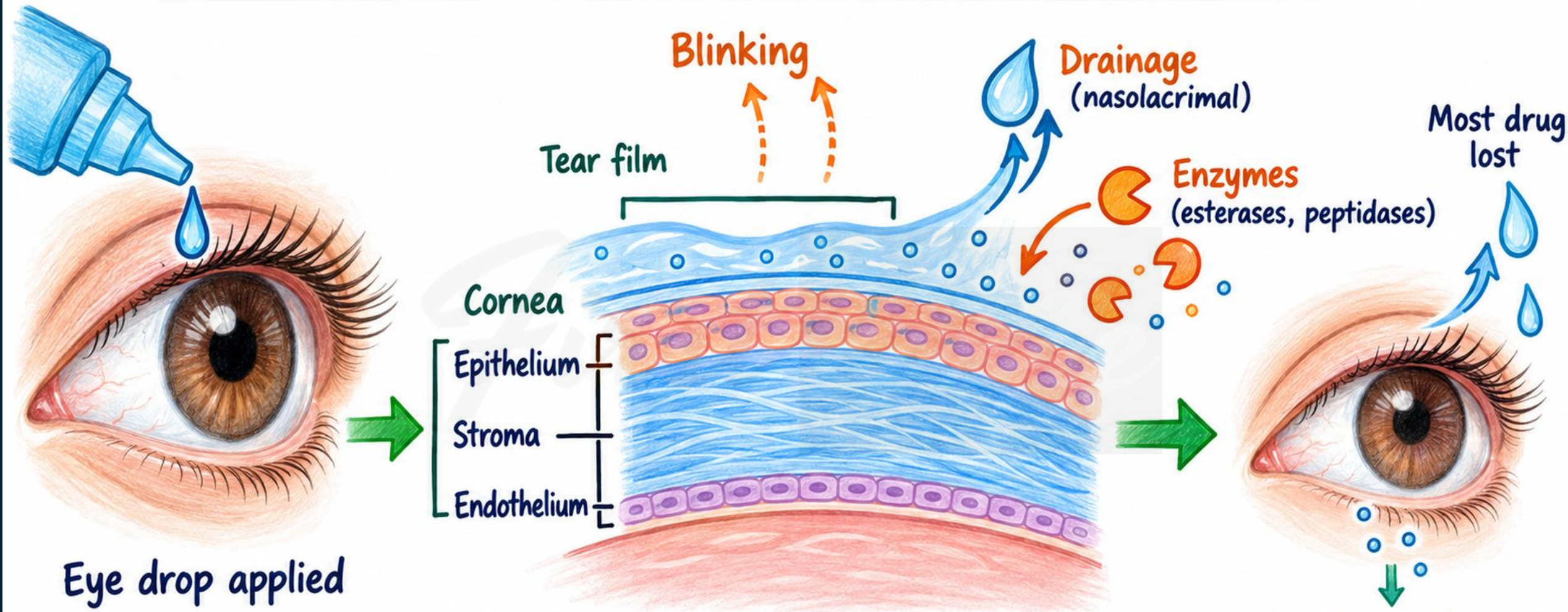


- Instilled as liquid; form a gel in response to temperature, pH or ions.

Shared requirements

- Sterility, ocular compatibility and suitable product performance.
- Residence time varies by formulation. There is no universal ranking.

OCULAR BARRIERS TO DRUG ABSORPTION



Tears, blinking, drainage and enzymes limit residence and penetration

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