TOPICAL ROUTE OF ADMINISTRATION AND DOSAGE FORMS

When the drug is applied topically:

-an exact dose can be administered,

-the first-pass effect of the liver associated with oral administration is bypassed,

-there is less trauma and tissue damage than might ocur after injection of the drug intramusculary or subcutaneously,

-there is no drug residue at a site of injection.

- The skin is one of the most easily accessible organs.
- Topical formulations are intended for local therapy and not for transdermal treatment of systemic infections. However, cutaneous administration is meant to mean a site of administration of formulations that may be intended for local (topical) treatments or for systemic treatment of generalized diseases.

TOPICAL FORMULATION

- Dusting powders
- Solutions
- Lotions,
- Liniments,
- Ointments,
- Creams,
- Aerosols,

- **A dusting powder** is a finely divided insoluble powder containing ingredients such as talc, zinc oxide, or starch.
- Coarse powders often have a gritty feel, whereas powders containing particles that are <20 µm in all dimensions have a smooth feel.
- Some dusting powders absorb moisture, which discourages bacterial growth. Others are used for their lubricant properties.

- **A cream** is a semisolid emulsion formulated for application to the skin or mucous membranes.
- Droplet diameter in topical emulsions generally ranges from 0.1–100 µm.
- Cream emulsions are most commonly oil-in-water but may be water-in-oil.
- Creams are aqueous-based products, whereas ointments are generally oil-based formulations.

- **An ointment** is a greasy, semisolid preparation that contains dissolved or dispersed drug.
- A range of ointment bases is used, including hydrocarbons, vegetable oils, silicones, absorption bases consisting of a mixture of hydrocarbons and lanolin, emulsifying bases consisting of a mixture of hydrocarbons and an emulsifying agent, and water-soluble bases.
- Ointments tend to remain at the site of application for a longer time, trapping moisture between the skin and the ointment film, thereby hydrating the skin and rendering it a less effective barrier to drug absorption.

- **A gel** is a nongreasy, semisolid, aqueous solution.
- The semisolid properties are due to a polymer imparting a continuous structure to the hydrophilic liquid.
- The polymers used include natural gums such as tragacanth, pectin, and agar; semisynthetic materials such as methylcellulose, hydroxymethylcellulose, and carboxymethylcellulose; and synthetic polymers such as carbopol.
- Medicaments are generally well released from gels, which are easily washed off on account of their water miscibility.

- **A solution for topical use** is a mixture of two or more components that form a single phase down to the molecular level.
- Topical solutions include eye drops, ear drops, and lotions.
- Eye drops are sterile liquids that contain a range of drugs, including local anesthetics, antibiotics, anti-inflammatory agents, and drugs acting on the autonomic nervous system of the eye.
- They are instilled onto the eyeball or within the conjunctival sac.
- Ear drops are solutions of drugs such as antibiotics, insecticides, or anti-inflammatory agents. The vehicle may be water, glycerol, propylene glycol, or alcohol/water mixtures. They are applied to the external auditory canal.

- **A lotion** is usually an aqueous solution (or suspension) for application to inflamed, ulcerated skin.
- Lotions cool the skin by evaporation of solvents, leaving a film of dry powder.
- Lotions are suitable for use on hairy areas and for lesions with minor exudation and ulceration.

Liniments

The liniments are liquid or semiliquid preparations meant for application to the skin. Applied to skin with friction and rubbing of the skin. They act as rubefacient, soothing or stimulant. The vehicle may be alcohol, oil or soap based.

Absorbine® Veterinary Liniment Gel

- Spearmint-scented gel contains natural menthol and herbal extracts
- Powerful muscle, joint, and arthritis pain reliever
- Menthol loosens stiff joints and reduces swelling