BP702T · B.Pharm Semester VII · Theory Notes

# Cosmetics and Cosmeceuticals

## Unit I — Introduction to Cosmetics and Cosmeceuticals (6 hours)

**Unit I (6 hours)**

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**Pills & Python Notes**

From-zero teaching standard: every technical term is defined before use.

Syllabus coverage: Unit I (6 hours).

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# CHAPTER 1: Cosmetics and Cosmeceuticals — Definitions, Difference and Classification

## 1. Learning Objectives

After studying this chapter, you will be able to:

1 Define a cosmetic in simple words.

2 Define a cosmeceutical in simple words.

3 Explain the difference between a cosmetic and a cosmeceutical.

4 List the main classes of cosmetics as given in the syllabus (skin care, hair care, oral care, foot care, body cavities, decorative cosmetics, cleansing cosmetics, perfumes and fragrances).

5 Give at least one example product for each class of cosmetics.

6 State why this classification matters for a pharmacy student.

## 2. Definitions

**Cosmetic:** A cosmetic is a substance or product that is applied to the human body (skin, hair, nails, lips, teeth, mouth) with the purpose of cleaning, beautifying, protecting, perfuming, or changing appearance. It is NOT meant to treat or cure a disease. Simple meaning: a product that makes you look or feel better on the outside.

**Cosmeceutical:** A cosmeceutical is a cosmetic product that contains a biologically active ingredient (an ingredient that has some effect on the skin's structure or function). The word is a mix of "cosmetic" + "pharmaceutical". Simple meaning: a beauty product that claims to do a little more than just decorate — it aims to improve the skin or hair in a mild way. Important: "cosmeceutical" is a common industry term, not an official drug category.

**Cosmetology:** The science and art of making and using cosmetics.

## 3. Terminology Table

| Term | Simple meaning |
|---|---|
| Cosmetic | Product applied on the body to clean, beautify, protect, or perfume |
| Cosmeceutical | Cosmetic containing an active ingredient that claims a mild benefit beyond simple beautification |
| Dosage form (of a cosmetic) | The physical form in which a cosmetic is presented, e.g., cream, lotion, gel |
| Excipient | An inactive ingredient that carries or supports the product, e.g., water, emulsifier |
| Active ingredient | The ingredient included for a specific effect, e.g., a moisturising agent |
| Topical | Applied on the surface of the body (skin, hair) |

| Term | Simple meaning |
|---|---|
| Formulation | The recipe — the list of ingredients and their amounts used to make a product |
| Decorative cosmetic | A cosmetic used mainly to change appearance, e.g., lipstick, nail polish |
| Cleansing cosmetic | A cosmetic used mainly to remove dirt, oil, or makeup |

# 4. Simple Explanations

### What is a cosmetic, really?

Think of anything you put on the outside of your body to look, smell, or feel better — face cream, shampoo, toothpaste, lipstick, soap, perfume. All of these are cosmetics. A cosmetic does not go deep into the body like a medicine. It works on the surface.

### What is a cosmeceutical, really?

Some beauty products say things like "reduces fine lines" or "evens skin tone" or "fights dandruff". When a cosmetic product contains an ingredient that has a mild biological action (for example, an ingredient that mildly exfoliates or moisturises more strongly), the industry calls it a cosmeceutical. Remember: it is still legally treated as a cosmetic, not as a drug.

### Why the difference matters

A drug must prove it treats a disease before it is sold. A cosmetic must be safe, but it does not have to prove it treats disease. A cosmeceutical sits between these two ideas — it looks like a cosmetic on the shelf but makes stronger claims. As a pharmacy student, you must know this boundary so you never promise a patient that a cosmetic will cure a disease.

# 5. Classifications

### 5.1. Classification by use-site / purpose (as per the syllabus)

| Class | Simple description | One example product |
|---|---|---|
| Skin care cosmetics | Products applied to skin to protect, moisturise, or keep it healthy-looking | Moisturising cream |
| Hair care cosmetics | Products for cleaning, conditioning, or styling hair | Shampoo |
| Oral care cosmetics | Products for cleaning and freshness of teeth and mouth | Toothpaste |
| Foot care cosmetics | Products for care of feet — softening, deodorising, freshness | Foot cream |
| Cosmetics for body cavities | Products used in the mouth, nose, or genital area for cleaning or freshness | Mouthwash |
| Decorative cosmetics | Products used to decorate or colour the face, eyes, lips, nails | Lipstick |
| Cleansing cosmetics | Products used to remove dirt, oil, sweat, or makeup from the body | Face wash |
| Perfumes and fragrances | Products that give a pleasant smell to the body or hair | Perfume |

### 5.2. A second useful classification (by the work the product does)

1 **Protective:** shields skin from sun or harsh weather — e.g., sunscreen.

2 **Emollient/moisturising:** softens and moisturises skin — e.g., body lotion.

3 **Astringent:** tightens skin and reduces oiliness feeling — e.g., toner.

4 **Cleansing:** removes dirt and oil — e.g., soap, face wash.

5 **Decorative:** changes colour or appearance — e.g., foundation, eyeliner.

6 **Fragrant:** gives pleasant smell — e.g., deodorant.

7 **Deodorant:** reduces body odour — e.g., roll-on.

### 5.3. Cosmetic vs Cosmeceutical vs Drug — the three zones

| Feature | Cosmetic | Cosmeceutical | Drug |
|---|---|---|---|
| Main purpose | Clean, beautify, protect, perfume | Cosmetic + mild active benefit | Treat, prevent, or diagnose disease |
| Example | Lipstick | Anti-ageing cream used in products aimed at reducing appearance of fine lines | Antibiotic ointment |
| Must prove disease treatment? | No | No (legally it is a cosmetic) | Yes |
| Safety requirement | Must be safe for use | Must be safe for use | Must be safe AND effective |

## 6. Mechanisms / Processes

### How a cosmetic works (general idea)

A cosmetic works on the body surface in three simple ways:

1 **Physical action:** It covers, coats, or colours the surface. Example: lipstick coats the lips with colour.

2 **Cleaning action:** It lifts dirt and oil from the surface so water can wash it away. Example: soap surrounds oil droplets and rinses them off.

3 **Conditioning/protecting action:** It leaves a thin layer that keeps moisture in or keeps harm out. Example: moisturiser forms a film that slows water loss from skin.

None of these actions are meant to change the body's internal workings — that is the job of a drug.

### How a cosmeceutical is positioned

```
Cosmetic claim ("makes skin look smooth")
        ↓ (add an active ingredient with a mild biological effect)
Cosmeceutical claim ("used in products aimed at reducing the appearance of fine lines")
        ↓ (if it claimed to cure a disease, it would need drug approval)
Drug claim ("treats eczema")
```

Key takeaway: moving from left to right, the claims get stronger — and the regulatory burden gets heavier. A cosmeceutical stays on the cosmetic side of the line.

## 7. Textual Diagrams / Flowcharts

### Flowchart: Is it a cosmetic, cosmeceutical, or drug?

```
START: What does the product claim to do?
  |
  ├─→ Only clean / beautify / protect / perfume?
  |       └─→ COSMETIC (e.g., lipstick, soap)
  |
  ├─→ Contains an active ingredient and claims a mild benefit
  |    beyond beautifying (e.g., "evens skin tone")?
  |       └─→ COSMECEUTICAL (e.g., anti-ageing serum)
  |
  └─→ Claims to treat, prevent, or diagnose a DISEASE?
          └─→ DRUG (needs drug approval)
```

### Simple map of the 8 syllabus classes

```
COSMETICS
 ├── Applied to body surfaces
 |     ├── Skin care        (cream, lotion, sunscreen)
 |     ├── Hair care        (shampoo, conditioner, hair oil)
 |     ├── Oral care        (toothpaste, mouthwash)
 |     └── Foot care        (foot cream, foot powder)
 ├── Special areas
 |     ├── Body cavities    (mouthwash, intimate wash)
 |     └── Cleansing        (soap, face wash, cleanser)
 └── Appearance & smell
       ├── Decorative       (lipstick, foundation, nail enamel)
       └── Perfumes & fragrances (perfume, deodorant spray)
```

## 8. Infographic Concept Box

INFOGRAPHIC CONCEPT: "The Cosmetic Universe — 8 Families." A central circle labelled "COSMETICS" with 8 branches, each with its own icon and one example: Skin care (jar icon — moisturising cream), Hair care (comb icon — shampoo), Oral care (tooth icon — toothpaste), Foot care (foot icon — foot cream), Body cavities (mouth icon — mouthwash), Decorative (lipstick icon), Cleansing (soap bubble icon — face wash), Perfumes & fragrances (spray bottle icon). A small satellite circle labelled "Cosmeceutical" orbits the centre with the caption: "cosmetic + active ingredient = stronger claim, same cosmetic rules." Colour code: blue for cleansing, pink for decorative, green for herbal/natural products.

## 9. Tables

### Table 9A: Full classification with purpose and example (syllabus classes)

| S. No. | Class | Purpose (in simple words) | Example product |
|---|---|---|---|
| 1 | Skin care | Protect, moisturise, keep skin healthy-looking | Moisturising cream |
| 2 | Hair care | Clean, condition, style hair | Shampoo |
| 3 | Oral care | Clean teeth, fresh breath | Toothpaste |
| 4 | Foot care | Soften feet, reduce odour | Foot cream |
| 5 | Body cavities | Clean/freshen mouth, nose, intimate areas | Mouthwash |
| 6 | Decorative cosmetics | Colour and decorate face, eyes, lips, nails | Lipstick |
| 7 | Cleansing cosmetics | Remove dirt, oil, sweat, makeup | Face wash |
| 8 | Perfumes and fragrances | Give pleasant smell | Perfume |

### Table 9B: Difference between cosmetic and cosmeceutical (exam-favourite)

| Point | Cosmetic | Cosmeceutical |
|---|---|---|
| Definition | Product to clean, beautify, protect, or perfume | Cosmetic containing an active ingredient with mild biological action |
| Main claim | "Looks/feels better" | "Looks better + mild benefit" |
| Example | Lipstick, ordinary soap | Anti-ageing cream, anti-dandruff shampoo |
| Legal status | Cosmetic | Still treated as a cosmetic (not a separate drug category) |
| Safety testing | Required | Required |
| Disease-treatment proof | Not required | Not required (must NOT claim to cure disease) |

## 10. Examples

1 **Cosmetic:** A simple lip balm that moisturises lips and adds shine — its only job is beautifying and protecting.

2 **Cosmeceutical:** An anti-ageing night cream containing an active ingredient, used in products aimed at reducing the appearance of fine lines — stronger claim than a plain cream, but not a drug.

3 **Skin care class:** Sunscreen lotion — protects skin from sun.

4 **Hair care class:** Anti-dandruff shampoo — cleans hair and is used in products aimed at reducing visible dandruff flakes.

5 **Decorative class:** Foundation — evens skin colour appearance.

6 **Foot care class:** Foot powder — absorbs sweat, reduces odour.

7 **Body cavity class:** Mouthwash — freshens breath, cleans mouth.

8 **Perfume class:** Eau de toilette — gives pleasant smell.

## 11. Analogies

1. **Cosmetic vs cosmeceutical — paint vs paint with primer:** A plain paint (cosmetic) only changes the colour of a wall. A paint mixed with primer (cosmeceutical) also sticks better and covers stains — it does a bit more work, but it is still paint, not a repair crew (drug).
2. **Classification — rooms in a house:** The 8 classes of cosmetics are like 8 rooms in a house. Each room has a different job (kitchen for cooking, bedroom for sleeping), but all belong to the same house. Similarly, shampoo and lipstick belong to different classes but the same "cosmetics" family.
3. **Active ingredient — the spice in food:** A plain curry (cosmetic) fills the stomach. Add a special spice (active ingredient) and the curry gets a new character (cosmeceutical). But it is still food, not medicine.

## 12. Pharmacy Relevance

1. A pharmacist is often the first person a customer asks: "Which cream is good for my skin?" You must know what each class of product does so you give safe, honest advice.
2. You must never let a customer believe a cosmetic will cure a skin disease — that is the cosmetic/cosmeceutical/drug boundary, and crossing it can harm the patient and break the law.
3. In community pharmacy, cosmetics and cosmeceuticals are a major part of the front-of-shop business; understanding them makes you a better dispenser AND a better counsellor.
4. In industry, B.Pharm graduates work in cosmetic formulation, quality control, and regulatory departments — this chapter is your first step into that career.
5. Cosmeceutical claims are closely watched by regulators; a pharmacist who understands the wording ("used in products aimed at..." vs "cures") protects both the company and the consumer.

## 13. India Context

- India has a very large and fast-growing cosmetics market, with strong demand for skin care, hair care, and herbal/Ayurvedic-positioned products.
- Indian consumers widely use traditional ingredients (turmeric, sandalwood, aloe) in daily cosmetic routines — this is why herbal cosmetics have a full section later in this subject.
- The Cosmetics Rules, 2020 (framed under the Drugs and Cosmetics Act) govern manufacture, import, and sale of cosmetics in India; the CDSCO is the central regulator and BIS sets product standards. (Details in Chapter 8/Unit V of the syllabus coverage.)
- Labelling in India must follow the rules — name, use, ingredients, and warnings must be clearly printed so the consumer can choose safely.

## 14. Key Points

1. A **cosmetic** cleans, beautifies, protects, or perfumes the body surface; it does not treat disease.
2. A **cosmeceutical** = cosmetic + active ingredient with a mild benefit claim; legally still a cosmetic.
3. A **drug** treats, prevents, or diagnoses disease and needs proof of effectiveness.

4 The syllabus classifies cosmetics into 8 groups: skin care, hair care, oral care, foot care, body cavities, decorative cosmetics, cleansing cosmetics, perfumes and fragrances.

5 "Used in products aimed at..." is safe wording; "cures..." is a drug claim and is not allowed for cosmetics.

## 15. Common Confusions

| Confusion | Clarification |
|---|---|
| "Cosmeceutical is an official legal category." | No. It is an industry/marketing term. Legally the product is still a cosmetic. |
| "If it has an active ingredient, it must be a drug." | No. What decides is the CLAIM. A mild beauty-benefit claim keeps it a cosmetic; a disease-treatment claim makes it a drug. |
| "Herbal means automatically safe." | No. Herbal ingredients can also cause allergy or irritation; safety testing is still needed. |
| "Sunscreen is a drug because it prevents sunburn." | Sunscreen is regulated as a cosmetic in many frameworks when positioned for protection; the exact category depends on claims and local rules — check the claim wording. |
| "Decorative cosmetics do nothing for skin." | They mainly decorate, but many also contain moisturisers or sun filters — the PRIMARY purpose decides the class. |

## 16. Common Mistakes

1 Writing "cosmeceuticals cure wrinkles" in exams — wrong; write "used in products aimed at reducing the appearance of fine lines."

2 Listing only 5–6 of the 8 syllabus classes and missing foot care or body cavities.

3 Calling every cream a "drug" — a cream is a dosage form, not a legal category; the claim decides.

4 Forgetting that perfumes and fragrances are a separate syllabus class.

5 Using brand names in answers — the syllabus and exams want generic product types, not brand endorsements.

## 17. Mnemonics

**To remember the 8 syllabus classes:** "**S**he **H**as **O**ften **F**ound **B**eauty **C**oming **P**erfectly **F**ine"

- **S**kin care
- **H**air care
- **O**ral care
- **F**oot care
- **B**ody cavities
- **C**leansing cosmetics
- **P**erfumes and fragrances

- **F** — decorative cosmetics (think "**F**ancy face" — decorative)

Shorter version: "**S-H-O-F, B-C-P-D**" — say it as "shoff, bcpd" — Skin, Hair, Oral, Foot / Body cavities, Cleansing, Perfumes, Decorative.

**Cosmetic vs Cosmeceutical:** "**C**lean and **C**olour = **C**osmetic; **C**osmetic + **A**ctive = **C**osmeceutical" (C + A = CA).

## 18. Exam Summary

- Cosmetic: substance applied to the body to clean, beautify, protect, or perfume; no disease claim.
- Cosmeceutical: cosmetic with an active ingredient claiming mild benefit; industry term, legally a cosmetic.
- Drug: treats/prevents/diagnoses disease; needs proof.
- 8 syllabus classes with one example each: skin care (moisturising cream), hair care (shampoo), oral care (toothpaste), foot care (foot cream), body cavities (mouthwash), decorative (lipstick), cleansing (face wash), perfumes and fragrances (perfume).
- Works by physical action, cleaning action, or conditioning/protecting action on the body surface.
- India: Cosmetics Rules 2020, CDSCO regulator, BIS standards.
- Current trend: AI-assisted customised skincare and cosmetic innovation (generic trend, no product names).

## 19. One-Minute Revision

Cosmetic = clean/beautify/protect/perfume, no disease claim. Cosmeceutical = cosmetic + active ingredient, mild benefit claim, still legally a cosmetic. Drug = treats disease, needs proof. 8 classes: **S-H-O-F, B-C-P-D** (Skin, Hair, Oral, Foot; Body cavities, Cleansing, Perfumes, Decorative). Claim decides the category, not the ingredient. India: Cosmetics Rules 2020, CDSCO, BIS.

## 20. Short Questions

1 Define a cosmetic in your own words.

2 Define a cosmeceutical.

3 Give two differences between a cosmetic and a cosmeceutical.

4 List the 8 classes of cosmetics as per the syllabus.

5 Give one example product for each of: skin care, hair care, oral care, decorative cosmetics.

6 What is meant by a "cleansing cosmetic"? Give one example.

7 Why is "cosmeceutical" not an official drug category?

8 Name the three ways a cosmetic acts on the body surface.

## 21. Long Questions

1 Define cosmetics and cosmeceuticals. Explain the difference between a cosmetic, a cosmeceutical, and a drug with suitable examples.

2 Classify cosmetics according to the syllabus with a description and one example product for each class.

3 Discuss why the claims made by a product decide whether it is treated as a cosmetic or a drug. Illustrate with examples.

4 Write a short note on the current trends in cosmetic innovation, including the role of AI in customised skincare (generic discussion only).

## 22. MCQs (with Answer Key)

1 A cosmetic is primarily intended to:

a) Treat skin disease b) Clean, beautify, protect, or perfume the body c) Diagnose illness d) Act inside the body **Answer: b**

1 The term "cosmeceutical" is a combination of:

a) Cosmetic + cereal b) Cosmetic + pharmaceutical c) Cosmetic + chemical d) Cosmetic + ethical **Answer: b**

1 A cosmeceutical is legally treated as a:

a) Drug b) Cosmetic c) Medical device d) Food supplement **Answer: b**

1 Which of the following is a decorative cosmetic?

a) Shampoo b) Toothpaste c) Lipstick d) Mouthwash **Answer: c**

1 Toothpaste belongs to which class of cosmetics?

a) Hair care b) Oral care c) Foot care d) Decorative **Answer: b**

1 A foot cream belongs to:

a) Skin care b) Foot care c) Body cavities d) Cleansing cosmetics **Answer: b**

1 Mouthwash is an example of a cosmetic for:

a) Hair care b) Body cavities c) Decorative use d) Foot care **Answer: b**

1 Which statement is correct?

a) A cosmetic may claim to cure a disease b) A cosmeceutical must prove disease treatment like a drug c) A cosmetic must be safe but need not prove disease treatment d) A drug needs no safety testing **Answer: c**

1 Face wash is mainly a:

a) Decorative cosmetic b) Cleansing cosmetic c) Perfume d) Foot care product **Answer: b**

1 Perfume belongs to which class?

a) Cleansing cosmetics b) Skin care c) Perfumes and fragrances d) Oral care **Answer: c**

1 An anti-ageing cream used in products aimed at reducing the appearance of fine lines is best described as a:

a) Drug b) Cosmeceutical c) Antibiotic d) Vaccine **Answer: b**

1 What decides whether a product is treated as a cosmetic or a drug?

a) Its price b) Its colour c) The claims made about it d) Its container size **Answer: c**

## 23. Viva Questions

1 What is the simplest definition of a cosmetic?

2 What does the word "cosmeceutical" mean?

3 Name any four classes of cosmetics with one example each.

4 Is a cosmeceutical a drug? Why or why not?

5 Give one example each of a cleansing cosmetic and a decorative cosmetic.

6 What is the role of CDSCO for cosmetics in India?

7 What are the Cosmetics Rules, 2020 about, in one line?

8 What is one recent trend in cosmetic innovation?

## 24. Application-Based Questions

1 A company wants to sell a cream with the label "cures eczema in 7 days". As a pharmacy student, explain why this wording is a problem and suggest safer wording.

2 A customer asks you whether an "anti-wrinkle serum" is a medicine. How would you explain the difference between a cosmetic, a cosmeceutical, and a drug to this customer in simple words?

3 You are asked to group 12 products (shampoo, lipstick, toothpaste, sunscreen, perfume, foot powder, mouthwash, face wash, hair oil, nail enamel, body lotion, shaving cream) into the 8 syllabus classes. Show your grouping.

4 A new "AI skin-analysis app" suggests a personalised moisturiser for a customer. Discuss in general terms how AI-based customisation is changing skincare, without naming any product or brand.

## 25. References


- Baki & Alexander
- Barel/Paye/Maibach
- Benson & Watkinson
- Chisvert & Salvador
- Dweck & Santos
- Matsumoto

- Rosen

# CHAPTER 2: Cosmetic Dosage Forms and Common Excipients

## 1. Learning Objectives

After studying this chapter, you will be able to:

1 Define a cosmetic dosage form in simple words.

2 List the main dosage forms used for cosmetics and say what each one is, in one line.

3 Define an excipient and explain why cosmetics need excipients.

4 List the common excipients used in cosmetics with their functional roles.

5 Match common excipients (emulsifier, humectant, preservative, etc.) to their jobs.

6 Explain why preservatives and antioxidants are needed in cosmetic products.

## 2. Definitions

**Dosage form (cosmetic):** The physical form in which a cosmetic product is made and presented to the user — for example, a cream, lotion, gel, powder, stick, or spray. It decides how the product looks, feels, and is applied.

**Excipient:** Any ingredient in a product that is not the main active ingredient but helps the product work — it may carry the active ingredient, give the right texture, keep the product stable, or make it pleasant to use. Simple meaning: the "supporting team" behind the main ingredient.

**Vehicle / solvent:** The main liquid or base in which other ingredients are dissolved or spread. Water is the most common vehicle.

**Emulsion:** A mixture of oil and water that normally do not mix, made stable with the help of an emulsifier. Creams and lotions are emulsions.

**Emulsifier:** An ingredient that helps oil and water stay mixed together.

**Humectant:** An ingredient that attracts and holds water, keeping skin or the product moist.

**Preservative:** An ingredient that stops microbes (bacteria, fungi) from growing in the product.

**Antioxidant:** An ingredient that stops oils and fats in the product from going rancid (spoiling by reaction with air).

## 3. Terminology Table

| Term | Simple meaning |
|---|---|
| Dosage form | Physical form of the product (cream, lotion, gel, etc.) |
| Excipient | Supporting/inactive ingredient that helps the product |

| Term | Simple meaning |
|---|---|
| Vehicle | Main base liquid, usually water |
| Emollient | Ingredient that softens and smooths skin |
| Humectant | Ingredient that attracts and holds moisture |
| Thickener | Ingredient that makes the product thicker |
| Opacifier | Ingredient that makes a product look milky/white instead of clear |
| Chelating agent | Ingredient that traps metal ions which could spoil the product |
| pH adjuster | Ingredient used to set the product's acidity/alkalinity |
| UV filter | Ingredient that absorbs or blocks ultraviolet rays from the sun |
| Colorant | Ingredient that gives colour to the product |
| Fragrance | Ingredient that gives pleasant smell |

# 4. Simple Explanations

### Why do cosmetics come in so many forms?

The same purpose can be served in different forms because different body parts and different users need different textures. A lipstick must be solid so it can be applied neatly to lips; a shampoo must be liquid so it spreads through hair and rinses off; a face powder must be dry so it absorbs oil. The dosage form is chosen to fit the job.

### Why do cosmetics need excipients?

Imagine making tea: tea leaves give the flavour (like the active ingredient), but you also need water, sugar, and milk to make it drinkable (like excipients). Similarly, a cosmetic needs water or oil to carry ingredients, an emulsifier to keep oil and water mixed, a thickener for the right feel, a preservative so it does not spoil, and a fragrance so it smells nice. Without excipients, the product would separate, spoil, or feel unpleasant.

### The big idea: form follows function

Form (dosage form) follows function (what the product must do). Cleaning products are usually liquids or bars that rinse off; leave-on products are usually creams, lotions, gels, or sticks that stay on the skin.

# 5. Classifications

### 5.1. Types of cosmetic dosage forms (one line each)

| Dosage form | What it is (one line) |
|---|---|
| Cream | A thick, smooth emulsion of oil and water that stays on the skin |
| Lotion | A thinner, more pourable emulsion than a cream, easy to spread over large areas |
| Gel | A clear or translucent jelly-like product that feels light and non-greasy |
| Ointment | A greasy, oil-based product that stays on skin and protects it |
| Paste | A thick product with a high amount of solid powder in a base, used for covering or drying |

| Dosage form | What it is (one line) |
|---|---|
| Powder | A dry, finely ground product used for absorbing oil or giving a matte finish |
| Stick | A solid product in a twist-up holder applied by rubbing, e.g., lipstick, deodorant stick |
| Spray / aerosol | A liquid broken into fine mist by a pump or pressurised gas, e.g., perfume spray |
| Liquid (solution) | Ingredients fully dissolved in a liquid, e.g., toner, mouthwash |
| Bar | A solid block used with water, e.g., soap bar, shampoo bar |
| Nail enamel | A coloured liquid that dries to a hard film on nails |
| Lipstick | A coloured solid stick for colouring and protecting lips |
| Shampoo | A cleansing liquid or bar that removes dirt and oil from hair and scalp |
| Toothpaste | A paste for cleaning teeth with a brush |

### 5.2. Classification by how the product is used

1. **Rinse-off products:** Applied and then washed away — shampoo, soap, face wash, toothpaste.
2. **Leave-on products:** Applied and left on the body — cream, lotion, lipstick, perfume, sunscreen.
3. **Classification by texture:** solids (stick, bar, powder), semisolids (cream, gel, ointment, paste), liquids (lotion, spray, solution).

## 6. Mechanisms / Processes

### How an emulsion stays mixed (the emulsifier's job)

Oil and water naturally separate — like oil floating on water in a curry left to stand. An emulsifier has one end that likes water and one end that likes oil. It sits at the boundary between tiny oil droplets and water, holding the droplets apart so they cannot join back together. Result: a stable cream or lotion.

```
Without emulsifier:        With emulsifier:
oil ————————  (separate      ~ oil droplets ~
water ————————  layers)      held apart in water
                               → smooth cream
```

### How a preservative protects the product

Cosmetics contain water and nutrients that microbes love. A preservative kills or stops the growth of bacteria and fungi, so the product stays safe from the day it is opened until it is finished.

```
Product made → water + nutrients present → microbes try to grow
     → preservative stops them → product stays safe
```

### How a humectant keeps skin moist

A humectant pulls water from the air (and from deeper skin layers) toward the skin surface, keeping it hydrated.

### How a UV filter protects

A UV filter absorbs or scatters the sun's ultraviolet rays before they reach the skin — like an umbrella that catches rain before it hits you.

## 7. Textual Diagrams / Flowcharts

### Flowchart: Choosing a dosage form

```
What must the product do?
  │
  ├─→ Clean and rinse off?  → liquid / bar / paste (shampoo, soap, toothpaste)
  │
  ├─→ Stay on skin and moisturise? → cream / lotion / ointment
  │
  ├─→ Feel light and non-greasy? → gel / light lotion
  │
  ├─→ Give colour to lips/nails? → stick (lipstick) / liquid film (nail enamel)
  │
  └─→ Give smell at a distance? → spray / aerosol (perfume)
```

### Structure of a typical cosmetic formula

```
COSMETIC PRODUCT
 ├── Vehicle (water / oil) — carries everything
 ├── Functional excipients
 │     ├── Emulsifier — keeps oil + water mixed
 │     ├── Emollient — softens skin
 │     ├── Humectant — holds moisture
 │     ├── Thickener — gives body/texture
 │     └── pH adjuster — sets correct acidity
 ├── Protective excipients
 │     ├── Preservative — stops microbes
 │     ├── Antioxidant — stops rancidity
 │     └── Chelating agent — traps harmful metal ions
 └── Sensory excipients
       ├── Fragrance — pleasant smell
       ├── Colorant — attractive colour
       └── Opacifier — milky appearance
```

## 8. Infographic Concept Box

INFOGRAPHIC CONCEPT: "Anatomy of a Cream Jar." A large labelled jar of cream in cross-section with callout labels pointing to coloured layers: blue layer = vehicle (water, "the carrier"); yellow droplets = oil phase with emollients ("softens skin"); green bridges between droplets = emulsifiers ("the peacemakers holding oil and water together"); pink drops = humectants ("water magnets"); tiny shield icons = preservatives ("microbe guards"); leaf icons = antioxidants ("freshness keepers"). Bottom caption: "Every cosmetic is a team — the active ingredient is the captain, excipients are the players." Side panel: "Dosage form menu" showing 12 small icons (cream jar, lotion bottle, gel tube, stick, spray, bar, powder compact, nail polish bottle, lipstick, shampoo bottle, toothpaste tube, ointment tin).

## 9. Tables

## Table 9A: Common excipients and their functional roles

| Excipient type | Functional role (job) | Simple example idea |
|---|---|---|
| Vehicles / solvents | Dissolve or carry all other ingredients; main base of the product | Water, alcohol |
| Emulsifiers | Keep oil and water mixed in creams and lotions | Soap-like molecules with water-loving and oil-loving ends |
| Emollients | Soften, smooth, and protect skin by filling gaps between skin cells | Oils, fatty substances |
| Humectants | Attract and hold water to keep skin/product moist | Glycerin-type substances |
| Thickeners | Give the product body and correct consistency | Gums, waxes |
| Preservatives | Prevent growth of bacteria and fungi in the product | Antimicrobial agents |
| Antioxidants | Prevent oils/fats from going rancid on contact with air | Vitamin E-type substances |
| Fragrances | Give pleasant smell; mask base odour of ingredients | Essential oils, aroma compounds |
| Colorants | Give attractive colour to the product | Permitted dyes and pigments |
| UV filters | Absorb or scatter UV rays to protect skin | Sunscreen agents |
| Opacifiers | Make the product look milky/white instead of transparent | Fine white powders |
| Chelating agents | Trap metal ions that could spoil colour, smell, or stability | EDTA-type substances |
| pH adjusters | Set and maintain the correct acidity/alkalinity of the product | Mild acids or alkalis |

## Table 9B: Dosage form vs typical use (quick revision table)

| Dosage form | Stays on or rinses off? | Typical example |
|---|---|---|
| Cream | Stays on | Moisturising cream |
| Lotion | Stays on | Body lotion |
| Gel | Stays on | Hair styling gel |
| Ointment | Stays on | Protective skin ointment |
| Paste | Stays on / rinsed | Toothpaste (rinsed), covering paste |
| Powder | Stays on | Face powder, talcum powder |
| Stick | Stays on | Lipstick, deodorant stick |
| Spray/aerosol | Stays on | Perfume, deodorant spray |
| Liquid solution | Either | Toner (stays), mouthwash (rinsed) |
| Bar | Rinsed off | Soap bar |
| Nail enamel | Stays on | Nail polish |
| Shampoo | Rinsed off | Shampoo |

## 10. Examples

1 **Cream:** A moisturising cream — thick emulsion, stays on skin, softens dry skin.

2 **Lotion:** A body lotion — thinner than cream, spreads easily over arms and legs.

3 **Gel:** A face gel — clear, light, non-greasy, suits oily skin.

4 **Stick:** A lipstick — solid, gives colour to lips; a deodorant stick — solid, reduces odour.

5 **Spray:** A perfume — fine mist, gives fragrance.

6 **Powder:** A face powder — absorbs oil, gives matte finish.

7 **Excipient in action:** An emulsifier in a cream keeps the oil droplets mixed in water so the cream does not split into layers.

8 **Preservative in action:** A preservative in a lotion stops bacteria from growing after the bottle is opened and fingers touch the product.

## 11. Analogies

1 **Excipients — the film crew:** The active ingredient is the film's hero actor, but the film needs a camera crew, lights, and makeup artists (excipients) to look good on screen. Without the crew, there is no film.

2 **Emulsifier — a peacemaker:** Oil and water are like two people who refuse to sit together; the emulsifier is the peacemaker who holds one's hand in each hand and keeps them at the same table.

3 **Dosage forms — clothes for different weather:** You wear a raincoat in rain and light cotton in summer. Similarly, a product "wears" the dosage form that suits its job — a stick for lips, a liquid for hair.

4 **Preservative — a security guard:** The product is a building full of food (water + nutrients); microbes are intruders; the preservative is the security guard at the gate.

5 **Humectant — a sponge:** A humectant works like a small sponge, pulling water in and holding it near the skin.

## 12. Pharmacy Relevance

1 Every cosmetic you dispense or recommend is built from a dosage form + excipients — understanding them lets you explain why a gel suits oily skin but a cream suits dry skin.

2 Excipient knowledge is directly tested in quality control jobs in cosmetic industry — you must know what each excipient does to check a formula.

3 Preservative and antioxidant understanding helps you advise on shelf life, storage ("keep away from sunlight"), and why a customer should not use an expired cream.

4 If a customer reports itching or rash from a cosmetic, your excipient knowledge (fragrance, preservative, colorant as common irritants) helps you guide them to a doctor and suggest simpler products.

5 Formulation and development departments in cosmetic companies hire B.Pharm graduates specifically for this dosage-form and excipient knowledge.

## 13. India Context

- India has a strong tradition of oil-based cosmetics (hair oils, body oils), so ointment- and oil-type dosage forms are very familiar to Indian consumers.
- In hot and humid Indian climates, light dosage forms (gels, lotions, sprays) are often preferred over heavy creams and ointments — a useful counselling point.
- Many Indian cosmetic products are positioned around herbal/natural ingredients; excipients must still be safe and properly preserved even in "natural" products.
- BIS (Bureau of Indian Standards) lays down specifications for many cosmetic products and their testing — covered in detail in the regulatory chapter.

## 14. Key Points

1. A **dosage form** is the physical form of a cosmetic: cream, lotion, gel, ointment, paste, powder, stick, spray, liquid, bar, nail enamel, lipstick, etc.
2. **Form follows function:** rinse-off jobs use liquids/bars/pastes; leave-on jobs use creams/lotions/gels/sticks.
3. **Excipients** are supporting ingredients: vehicles, emulsifiers, emollients, humectants, thickeners, preservatives, antioxidants, fragrances, colorants, UV filters, opacifiers, chelating agents, pH adjusters.
4. An **emulsifier** keeps oil and water mixed; a **humectant** holds moisture; a **preservative** stops microbes; an **antioxidant** stops rancidity.
5. Never name a brand in exams — write generic dosage forms and excipient types.

## 15. Common Confusions

| Confusion | Clarification |
|---|---|
| "Cream and lotion are the same." | Both are emulsions, but cream is thicker and lotion is thinner and more pourable. |
| "Excipients are useless fillers." | No — they decide stability, safety, texture, and shelf life; a product fails without them. |
| "Preservatives and antioxidants do the same job." | No — preservatives fight microbes; antioxidants fight rancidity (air damage to oils). |
| "Gel and ointment are the same." | Gel is usually water-based, light, and non-greasy; ointment is oil-based and greasy. |
| "Natural products need no preservative." | Wrong — any product with water can grow microbes; safety needs are the same. |

## 16. Common Mistakes

1. Writing only 4–5 dosage forms when the question asks for "types of dosage forms" — list at least 10–12.
2. Mixing up humectant (holds water) and emollient (softens skin) — learn the one-line difference.

3 Forgetting chelating agents, opacifiers, and pH adjusters in the excipient list.

4 Describing a preservative as "killing germs on skin" — its job is protecting the PRODUCT from microbes, not treating the skin.

5 Using brand names as examples — always use generic product types.

## 17. Mnemonics

**Dosage forms — "C**reams **L**ove **G**entle **O**ils, **P**astes **P**lease **S**kin; **S**prays **L**eave **B**ars **N**eatly **L**ovely":

- **C**ream, **L**otion, **G**el, **O**intment, **P**aste, **P**owder, **S**tick, **S**pray, **L**iquid, **B**ar, **N**ail enamel, **L**ipstick

Simpler: "**C-L-G-O-P-P-S-S-L-B-N-L**" — chant it as "clgoppsslbnl".

**Excipients — "V**ery **E**ager **E**lephants **H**ug **T**iny **P**andas, **A**nd **F**eed **C**ute **U**nicorns **O**n **C**arrots **P**atiently":

- **V**ehicles, **E**mulsifiers, **E**mollients, **H**umectants, **T**hickeners, **P**reservatives, **A**ntioxidants, **F**ragrances, **C**olorants, **U**V filters, **O**pacifiers, **C**helating agents, **P**H adjusters

## 18. Exam Summary

- Dosage form = physical form of the cosmetic; form follows function.
- 12+ forms: cream, lotion, gel, ointment, paste, powder, stick, spray/aerosol, liquid, bar, nail enamel, lipstick (+ shampoo, toothpaste as specialised forms).
- Rinse-off (shampoo, soap, toothpaste) vs leave-on (cream, lotion, lipstick, perfume).
- Excipients = supporting ingredients; 13 types with roles: vehicles/solvents, emulsifiers, emollients, humectants, thickeners, preservatives, antioxidants, fragrances, colorants, UV filters, opacifiers, chelating agents, pH adjusters.
- Emulsifier keeps oil-water mixed; preservative guards against microbes; antioxidant guards against rancidity; humectant holds moisture.

## 19. One-Minute Revision

Dosage forms: **C-L-G-O-P-P-S-S-L-B-N-L** (Cream, Lotion, Gel, Ointment, Paste, Powder, Stick, Spray, Liquid, Bar, Nail enamel, Lipstick). Form follows function — rinse-off vs leave-on. Excipients: **V-E-E-H-T-P-A-F-C-U-O-C-P** — Vehicles, Emulsifiers, Emollients, Humectants, Thickeners, Preservatives, Antioxidants, Fragrances, Colorants, UV filters, Opacifiers, Chelating agents, pH adjusters. Emulsifier = peacemaker of oil and water. Preservative = microbe guard. Antioxidant = rancidity guard. Humectant = water magnet.

## 20. Short Questions

1 Define cosmetic dosage form with two examples.

2 Define an excipient.

3 What is the difference between a cream and a lotion?

4 What is the difference between a gel and an ointment?

5 What is an emulsifier? What is its job?

6 What is the difference between a preservative and an antioxidant?

7 What is a humectant? Give its function.

8 Name four excipients and state one role of each.

9 What is a chelating agent? Why is it added?

10 Give one-line descriptions of: stick, spray, bar, nail enamel.

## 21. Long Questions

1 List the various dosage forms used for cosmetics. Describe any six of them in one or two lines each, with one example product per form.

2 What are excipients? Classify the common excipients used in cosmetics with their functional roles, giving the purpose of each type.

3 Explain with the help of simple diagrams how an emulsifier keeps a cream stable, and how a preservative keeps a cosmetic product safe during use.

4 Distinguish between rinse-off and leave-on cosmetic products, giving four examples of each and the dosage forms typically used.

## 22. MCQs (with Answer Key)

1 Which of the following is a semisolid dosage form?

a) Spray b) Cream c) Powder d) Solution **Answer: b**

1 A lotion differs from a cream mainly in being:

a) Thicker b) Thinner and more pourable c) A solid d) A gas **Answer: b**

1 The main job of an emulsifier is to:

a) Give colour b) Keep oil and water mixed c) Give fragrance d) Kill microbes on skin **Answer: b**

1 A humectant is added to:

a) Attract and hold moisture b) Make the product white c) Adjust pH d) Trap metal ions **Answer: a**

1 Preservatives are added to cosmetics to:

a) Treat skin infection b) Prevent microbial growth in the product c) Give pleasant smell d) Make the product thicker **Answer: b**

1 Antioxidants in cosmetics prevent:

a) Microbial growth b) Rancidity of oils and fats c) Water loss d) Colour fading of clothes **Answer: b**

1 Which dosage form is applied as a fine mist?

a) Bar b) Paste c) Spray/aerosol d) Powder **Answer: c**

1 Nail enamel is best described as:

a) A coloured liquid that dries to a film on nails b) A powder for nails c) A tablet for nails d) A gas for nails **Answer: a**

1 A chelating agent is added to:

a) Give fragrance b) Trap metal ions that could spoil the product c) Colour the product d) Make foam **Answer: b**

1 Which of the following is a rinse-off product?

a) Lipstick b) Perfume c) Shampoo d) Body lotion **Answer: c**

1 An opacifier makes a product look:

a) Transparent b) Milky/white and non-transparent c) Coloured red d) Sparkling **Answer: b**

1 UV filters in cosmetics are used to:

a) Give flavour b) Absorb or scatter ultraviolet rays c) Thicken the product d) Preserve the product **Answer: b**

## 23. Viva Questions

1 What is a cosmetic dosage form?

2 Name any six cosmetic dosage forms.

3 What is an excipient?

4 What does an emulsifier do?

5 Difference between humectant and emollient?

6 Why is a preservative needed in a cream?

7 What is the difference between rinse-off and leave-on products? Give two examples of each.

8 What is a pH adjuster?

## 24. Application-Based Questions

1 A customer with very oily skin asks for a moisturiser. Which dosage form (cream, lotion, or gel) would you suggest and why? Explain using excipient knowledge.

2 A small company wants to launch a "100% natural face cream with no preservative". Explain the risk in simple words and what could happen after the jar is opened.

3 You see a lotion bottle where the oil layer has separated and floats on top. Which excipient has failed, and what does this tell you about the product?

4 Design (on paper) a simple product brief for a summer body lotion for the Indian market: choose a dosage form and list the excipient types you would include, with one-line reasons.

## 25. References


- Baki & Alexander
- Barel/Paye/Maibach
- Benson & Watkinson
- Chisvert & Salvador
- Dweck & Santos
- Matsumoto
- Rosen