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10. Cosmetics

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10.1 Introduction:

The word 'Cosmetic' derived from a Greek word – 'kosmesticos' that means 'to adorn'. Cosmetics, as defined in the act, mean articles meant to be rubbed, poured, sprinkled or sprayed or introduced into or otherwise applied to the human body or any part there for cleansing, beautifying,promoting, attractiveness or altering the appearance and includes any article intended for use.

The importance of beautification to the mankind has been known since the prehistoric time and the desire to look beautiful and healthy has been developing in the society. In recent times fitness, good health, looks, way of presenting oneself are being counted as one of qualities of personality, nowadays people are also being judged on these factors. Hence today there is necessity and desirablerequirements to give more attention to the looks and beautification for social acceptance as well as professional success, which is also overemphasized by the media. On the other hand, life span of an average individual has been increased and factors such as sedentary lifestyle and dietary excesses associated with genetic determination, pregnancy and the aging process, contribute to alterations of

the face and body that result in the loss of the individual's self-image. Cosmetic is a Greek word which means to adorn (addition of something decorative to a person or a thing). It may be defined asa substance which comes in contact with various parts of the human body like skin, hair, nail, lips, teeth, and mucous membranes etc. Cosmetics substances help in improving or changing the outward show of the body and also mask the odour of the body. It protects the skin and keeps it in good condition. In general, cosmetics are external preparations which are applied on the external parts of the body. Cosmetics include like skin care creams, lotions, powders, perfumes, lipsticks, fingernail and toenail polish, eye and facial makeup, permanent waves, colored contact lenses, hair colors, hairsprays and gels, deodorants, hand sanitizer, baby products, bath oils, bubble baths, bath salts, butters and many other types of products. A subset of cosmetics is called make-up which refers mainly to colored products intended to change the user's appearance.

Now-a-days herbal extracts are used in the cosmetics preparations for augmenting beauty and attractiveness. Herbal cosmetics are classified on the basis of dosage form like cream, powder, soaps,solution, etc. and according to part or organ of the body to be applied for like; cosmetics for skin, hair, nail, teeth and mouth etc. Creams are semisolid emulsions intended for application to the skin or mucous membrane. A low-fat moisturizer that disappears into the skin is called as a vanishing cream. It softens skin, leaving nothing behind. Vanishing cream are o/w emulsion-based preparationscontaining aqueous phase and oil phase. In the last few years, the consumption of cosmetics has touched new heights and the curve is shootingupwards and hence the controls sought to be exercised on the drugs have been extended to a certain extent to the cosmetics.

10.1.1 Definitions:

Definition of cosmetics as per Indian regulations:

Cosmetics, as defined in the act, means articles meant to be rubbed, poured, sprinkled or sprayed orintroduced into or otherwise applied to the human body or any part there for cleansing, beautifying,promoting, attractiveness or altering the appearance and includes any article intended for use.

Definition of cosmetics as per EU regulations:

A cosmetic product is any substance or mixture intended to be placed in contact with the external parts of the human body, or with the teeth and mucous membranes of the oral cavity, with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them,keeping them in good condition or correcting body odours.

Definition of cosmetics as per FDA:

In the United States, the Food and Drug Administration (FDA), which regulates cosmetics, definescosmetics as products "intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance without affecting the body's structure or functions". This broad definition includes any material intended for use as an ingredient of a cosmetic product, with the FDA specifically excluding pure soap from this category.

Though the legal definition of cosmetics in most countries is broader, in some Western countries,cosmetics are commonly taken to mean only makeup products, such as lipstick, mascara, eye shadow, foundation, blush, highlighter, bronzer, and several other product types.

Cosmeceuticals: An introduction:

- Cosmetics arise from a Greek word ‘kosmeticos’ meaning ‘to adorn’.
- If any material used for beautification or improvement of appearance is known as cosmetics.
- They may be applied to skin, hair and nails for the purpose of covering colouring, softening,cleansing, nourishing, and protection.
- Cosmetics are intended to be applied externally.
- They include, but are not limited to, products that can be applied to the face: skin-
- care creams, lipsticks, eye and facial makeup, towelettes, and colored contact lenses; to the body: deodorants, lotions, powders, perfumes, baby products, bath oils, bubble baths, bath salts, and body butters; to the hands/nails: fingernail and toe nail polish, and hand sanitizer; tothe hair: permanent chemicals, hair colors, hair sprays, and gels.
- A subset of cosmetics is called “makeup”, refers primarily to products containing color pigments that are intended to alter the user’s appearance. Manufacturers may distinguishbetween “decorative” and “care” cosmetics.

- Cosmetics that are meant to be used on the face and eye area are usually applied with a brush,a makeup sponge, or the fingertips.
- Most cosmetics are distinguished by the area of the body intended for application.

Cosmetics can be also described by the physical composition of the product. Cosmetics can be liquidor cream emulsions; powders, both pressed and loose; dispersions; and anhydrous creams or sticks.

10.2 History of Cosmetics:

The history of cosmetics spans at least 7,000 years and is present in almost every society on earth. Cosmetic body art is argued to have been the earliest form of a ritual in human culture. The evidencefor this comes in the form of utilized red mineral pigments (red ochre) including crayons associated with the emergence of Homo sapiens in Africa. Cosmetics are mentioned in the Old Testament—2 Kings 9:30 where Jezebel painted her eyelids—approximately 840 BC—and the book of Esther describes various beauty treatments as well.

Cosmetics were also used in ancient Rome, although much of Roman literature suggests that it was frowned upon. It is known that some women in ancient Rome invented make up including lead-basedformulas, to whiten the skin, and kohl to line the eyes.

Lead has been used as a makeup product in the 18th century. Although it is said to be lethal to women who applied it daily to achieve a pale complexion representing nobility while a tanner skinrepresents the working class. Lead can be detrimental to people's health and cause death if mixed with the combination of lead and vinegar it allows lead to be absorbed through the skin.

Cosmetics have been in use for thousands of years, with ancient Egyptians and Sumerians using them. In Europe, the use of cosmetics continued into the Middle Ages-where the face was whitenedand the cheeks rouged-though attitudes towards cosmetics varied throughout time, with the use of cosmetics being openly frowned upon at many points in Western history. Regardless of the changesin social attitudes towards cosmetics, ideals of appearance were occasionally achieved through the use of cosmetics by many.

According to one source, early major developments in cosmetics include:

- Kohl used by ancient Egyptians.
- Castor oil also used in ancient Egypt as a protective balm
- Skin creams made of beeswax, olive oil, and rose water, described by the Romans
- Vaseline and lanolin in the nineteenth century.

Historically, the absence of regulation of the manufacture and use of cosmetics, as well as the absence of scientific knowledge regarding the effects of various compounds on the human body formuch of this time period, led to a number of negative adverse effects upon those who used cosmetics, including deformities, blindness and in some cases death. Many cosmetic products available at this time were still either chemically dubious or derived from natural resources commonly found in the kitchen, such as food coloring, berries and

beetroot. Examples of the prevalent usage of harmful cosmetics include the use of ceruse (white lead) throughout a number ofdifferent cultures, such as during the Renaissance in the West, and blindness caused by the mascara Lash Lure during the early 20th century.

During the 19th century, there was a high number of incidences of lead poisoning due to the fashionfor red and white lead makeup and powder, leading to swelling and inflammation of the eyes, weakened tooth enamel and blackening skin, with heavy use known to lead to death. Usage of whitelead was not confined only to the West, with the white Japanese face makeup known as oshiroi also produced using white lead. In the second part of the 19th century, scientific advances in the production of makeup lead to the creation of makeup free of hazardous substances such as lead.

Throughout the later 19th century and early 20th century, changes in the prevailing attitudes towardscosmetics led to the wider expansion of the cosmetics industry. In 1882, English actress and socialite Lillie Langtry became the poster-girl for Pears of London, making her the first celebrity to endorse a commercial product. She allowed her name to be used on face powders and skin products.

In 1968 at the feminist Miss America protest, protestors symbolically threw a number of feminine products into a "Freedom Trash Can", with cosmetics among the items the protestors called "instruments of female torture" and accoutrements of what they perceived to be enforced femininity.

As of 2016, the world's largest cosmetics company is L'Oréal, founded by Eugène Schueller in 1909 as the French Harmless Hair Colouring Company (now owned by Liliane Bettencourt 26% and Nestlé 28%; the remaining 46% is traded publicly).

Although modern makeup has been traditionally used mainly by women, men also use makeup to enhance their own facial features or cover blemishes and dark circles. The negative stigma of menwearing makeup in countries such as the United States has weakened over the years, with numbers increasing in the 21st century. Cosmetics brands have increasingly targeted men in the sale of cosmetics, with some products targeted specifically at men.

10.3 Evolution of Cosmeceuticals:

Although cosmetics for the purpose of beautifying, perfuming, cleansing, or rituals have existedsince the origin of civilization, only in the 20th century has great progress been made in the diversification of products and functions and in the safety and protection of the consumer.

Before 1938, cosmetics were not regulated as drugs, and cosmetology could often be considered as away to sell dreams rather than objective efficacy; safety for consumers was also sometimes precarious. Subsequently, the Food and Drug Administration (FDA), through the Federal Food, Drug, and Cosmetic Act, regulated cosmetics that were required to be safe for the consumer. With industrialization, many new ingredients from several industries (oleo- and petrochemical, food,etc.) were used in the preparation of cosmetics,

offering a list of new functions and forms. For bettercontrol of these ingredients, U.S. laws required ingredient classification and product labelling since 1966.

In Europe, the Council Directive 76/768/EEC of 27 July 1976 on the approximation of the laws of the member states relating to cosmetic products ("Cosmetics Directive") was adopted in 1976 to ensure the free circulation of cosmetic products and improve the safety of cosmetic products by placing the responsibility of the product on the cosmetic manufacturer.

In 1991, the Cosmetics Directive was amended for the sixth time and prohibited the marketing ofcosmetic products containing ingredients or combinations of ingredients tested on animals, as of 1998.

With the seventh amendment of the European Cosmetic Directive in 2003, a testing ban on finished cosmetic products was applied after 11 September 2004, whereas the testing ban on ingredients or combination of ingredients will be applied as soon as alternative methods are validated and adopted, with a maximum deadline of 11 March 2009, irrespective of the availability of alternative non– animal tests. For some endpoints (repeated-dose toxicity, reproductive toxicity, and toxicokinetics), amaximum deadline of 11 March 2013 was set up. Currently, big changes in the regulatory context are taking place and will greatly impact the cosmeticmarket. A recast of the European Cosmetic Directive has been adopted and is waiting for implementation very soon; this will strengthen consumer protection by limiting further the use of some ingredients and implementing stricter rules of post marketing surveillance. The implementationof REACH (Registration, Evaluation, and Authorization of Chemicals) will also have implications by limiting the number of ingredients available to the cosmetic industry and creating high pressure on small and middle-size enterprises (SMEs). At a later stage, we may also expect changes in ingredient availabilities at a global level, with the set-up of the global harmonization system (GHS).

All the changes in the regulatory context are often an "affair of specialists," and we are proud to havereal experts who have accepted to discuss the latest developments in that field for the purpose of this handbook. Another topic that is clearly of interest today is the replacement of animal testing by alternative methods for testing the safety of cosmetic ingredients. The cosmetic industry, by separate activities or via its association, the COLIPA (The "European Cosmetic, Toiletry, and Perfumery Association"), has been extremely active in developing in vitro methods and strategies for confirming the safety of their ingredients. Even if much work has still to be done, great progress has been realized. Some updates on method developments are described in this book, although it has not been possible to cover all of them. Finally, cosmetology has become a science-based on the combination of various expertise domains: chemistry, physics, biology, bioengineering, dermatology, microbiology, toxicology, statistics, and many others.

10.4 Types of Cosmetics:

The study of cosmetics is called "Cosmetology". It is the treatment of skin, hair, nails and includes manicure, pedicure, applying of artificial nails on a special occasion, hair styling, shampooing hair, body hair removal, chemical hair relaxers, or straighteners, perming,

coloring, highlighting of hair,hair extensions, and wig treatments. A person who is licensed in cosmetology is called a Cosmetologist. Products covered under cosmetics range from hair care, oral care, skincare, lipsticks,nail polishes, extenders, deodorants, body powder, and aerosols to quasi-pharmaceutical over-the- counter products such as antiperspirants, dandruff shampoos, antimicrobial soaps, anti-acne, and sunscreen products.

Table.10.1: Types of Cosmetics

Skin cosmetics	Hair cosmetics	Eye cosmetics	Dental and oral cavity cosmetics	Lip decorators	Nails cosmetics
Cleansing preparations	Hair dye	Eyeliners	Toothpaste	Lipsticks	Nail polish
Skin nourishing (sunburn, sunscreen)	Hair oil	Eye shadow	Mouthwashes	Lip balm	Nail remover
Skin tonic	Hair creams	Mascara	Tooth powder		Nail cream
Shaving cream	Hair gels	Eyebrow pencils			-
Vanishing cream	Antidandruff preparations	Kajal pencil	-	-	-
Cold cream	Hair removing creams	-	-	-	-
Face powder	Shampoos: liquid shampoo, liquid cream shampoo, powder shampoo, oil shampoo, gel shampoo	-	-	-	-

10.4.1 Skin Cosmetics:

A skin care treatments for the face, including steam, exfoliation (physical and chemical), extraction, creams, lotions, facial masks, peels, and massage.

They are normally performed in beauty salons, butare also a common spa treatment.

They are used for general skin health as well as for specific skin conditions. Types of facials include European facial, LED light therapy facials, hydrafacials and mini facials.

There Are Various Types Including in Skin Cosmetics:

- Cleansing preparation
- Skin nourishing
- Skin tonics
- Shaving cream
- Vanishing cream
- Cold cream
- Face powder

A. Cleansing Preparation:

Remember complaining to your mom when she made you wash your face every day? It turns outmom was right: regular skin cleansing is critical to maintaining healthy looking and feeling skin.Let's take a look at why facial cleansing is so important.

- **Removing Build Up:**

A common benefit of facial cleansing is the removal of dirt, oil, and other unwanted debris. Throughout the day the skin on your face is continually covered with bacteria, pollutants, viruses, dirt, and old (dead) skin cells. Daily facial washing removes these impurities to give the skin a freshlook. Without washing, your skin would be covered with a thick layer of dirt and grime which makeit difficult for other products to penetrate the skin properly.

- **Boosting Hydration:**

Regular facial cleansing (along with the use of a good moisturizer) is also an important factor inhelping the skin maintain a proper level of hydration. Dehydrated skin looks and feels rough, wrinkled and aged. Cleansing helps manage PH levels of the skin; enabling sufficient water andproduct retention.

- **Maintaining Clear Skin:**

Tiny glands under the skin produce oil called sebum to protect the skin from the dangers of the outside world. These glands use hair follicles within the skin as a pathway, allowing the oil to reachthe skins surface (outer layer) to form a barrier that prevents the penetration of bacteria or other harmful agents. xcessive dirt builds up on the surface can cause blockages of the follicle, trapping sebum, sweat, anddead skin cells. The lack of sebum on the skins surface allows bacteria to penetrate the follicle causing inflammation. The final result is acne Proper skin cleansing clears pores of debris to prevent dirt build up, allowing the sebum oil to reachthe skin surface unimpeded, decreasing the chances of a breakout.

Some Other Benefits of Cleansing:

- Regular cleansing is essential to keeping your skin looking radiant and healthy.
- Cleansing helps anti-aging products and treatments work properly.

- Cleansing helps maintain proper pore size.
- Cleansing encourages proper skin hydration and prevents the production of excess oils.

How To Choose the Right Facial Cleansers: With literally hundreds of cleansing products to choose from here are some simple tips for selectinga great skin cleanser:

- Know your skin type and choose a cleanser that's a good match. If you have dry skin, you'll want to avoid cleansers with high alcohol content. People with oily skin need a cleanser witha lower PH level. For sensitive skin you'll want a basic cleanser free from heavy fragrance and additives.
- The delivery type of the cleanser matters. Cream based cleansers are great for dry skin whilegel or foamy cleansers are better for oily skin types.
- If you wear a lot of makeup, you'll want a cleanser targeted toward removal.
- If you tend to sweat a lot from working out, look for a product targeting clogged pores.
- If you have concerns with allergies look for "natural" cleansers free of synthetic ingredients.
- Most cleansers marketed as "gentle" are great at removing dirt without over drying and irritating the skin.
- Selecting a cleanser with a balanced PH will help maintain your skins natural balance.
- Make sure to take your time comparing products and looking at reviews. We offer a varietyof skin cleansers in our clinics as well as our online store.

A comprehensive 10-step face cleansing routine can help you achieve clean, healthy, and radiant skin.

Here's a suggested routine, but keep in mind that skincare routines can be personalized based on individual skin types and concerns:

Step 1: Preparation: Before starting your cleansing routine, tie your hair back to keep it away from your face. Wash yourhands thoroughly to avoid transferring dirt and bacteria to your skin.

Step 2: Makeup Removal: If you wear makeup, use a makeup remover or a cleansing oil to gently dissolve and remove makeupfrom your face.

Step 3: Pre-Cleanse: Using a cleansing oil or a cleansing balm, massage your face in upward, circular motions to removeany remaining makeup, sunscreen, and impurities. Rinse with warm water

Step 4: Cleanse: Choose a facial cleanser suitable for your skin type (foam, gel, cream, or lotion) and massage it ontoyour damp face in gentle circular motions. Ensure you cover your entire face, including the jawline and neck. Rinse thoroughly with lukewarm water**.**

Step 5: Exfoliation (1-2 times a week): Use a gentle facial scrub or exfoliating product to remove dead skin cells and unclog pores. Avoidexcessive scrubbing, especially if you have sensitive skin.

Step 6: Toning: Apply a toner with a cotton pad to your face. Toners help balance the skin's pH levels and preparethe skin for better absorption of serums and moisturizers.

Step 7: Essence: Apply a hydrating facial essence or a lightweight serum to nourish and preparation the skin fordeeper hydration.

Step 8: Serum: Target specific skin concerns with a serum that addresses issues like dark spots, fine lines, or acne.Gently pat it onto your face, focusing on problem areas.

Step 9: Eye cream: Gently apply a small amount of eye cream around the orbital bone using your finger to preventtugging on the delicate skin.

Step 10: Moisturizer: Lock in moisture and seal all the previous skincare layers with a suitable moisturizer for your skintype. Massage it into your skin until fully absorbed.

B. Skin Nourishing:

Discover how to nourish skin with our effective 5-step nourishing skincare routine below:

Step 1: Cleanse With a Foaming Cleanser: The first step in every effective skincare routine is to cleanse, and a nourishing skincare routine is nodifferent! When choosing a cleanser, look for nourishing ingredients like Vitamin E, known for its moisturizing properties and Squalane, a highly refined moisturizing oil. Start with a gentle cleanser that's pH-balanced to maintain skin's natural protection barrier. Ultra Facial Cleanser is specially formulated with a sugar-derived glycoside foaming agent to thoroughly cleanse skin without over-drying. Plus, it's formulated with effective moisturizers like Squalane, Apricot Kernel Oil, Vitamin E, and Avocado Oil. Apply a small amount to clean fingertips and gently massage intodamp skin in upward, circular motions, avoiding the immediate eye area. Rinse thoroughly with warm water or a damp washcloth

Step 2: Boost Moisture with An Avocado Face Mask: Avocados aren't just a trendy fruit; their benefits have been well known since the 15th century andhave long been used to nourish dry skin. For step 2 in your nourishing skincare routine, we recommend applying a hydrating Avocado mask that leaves skin feeling soft and replenished. Our Avocado Nourishing Hydration Mask is formulated with Avocado Fruit Extract, omega-rich Avocado Oil, and Evening Primrose Oil to nourish skin and help protect water loss by sealing in moisture. This rich and addictively creamy facial mask intensely hydrates and nourishes skin for asoft, healthy look and feel.

Step 3: Moisturize With a Hydrating Serum: Facial serums help nourish skin by delivering highly concentrated formulations of active ingredientsto target skin concerns like dehydration. Reach for a deeply hydrating* formula like our Hydro- Plumping Re-Texturizing Serum Concentrate clinically-tested** to plump the look of skin. This serum, infused with 15% Glycerin and Shiso Leaf Extract, helps reduce the appearance of fine lines and uneven texture while helping improve the look of dull, tired-looking skin that can be caused by age-related dehydration.

Step 4: Use An Eye Cream with Nourishing Ingredients: When it comes to nourishing skin, we must not overlook the eye area! For a moisturizing eye treatment, reach for an under eye cream formulated with Avocado Oil. Avocado Oil is a rich, fatty-acid emollient that helps restore the natural moisture of the skin's surface. Providing further nutrients, Avocado Oil is a natural source of Amino Acid proteins and Vitamins A, D, and E. The perfect step for a burst of nourishing (eye) hydration!

KIEHL'S TIP: Create a nourishing eye mask! Refrigerate Creamy Eye Treatment with Avocadoand apply a rich layer around your eye area. Relax and after 10 minutes tissue off!

Step 5: Provide 24-Hour Hydration with A Face Cream: The final step in our nourishing skincare routine is all about hydrating with an effective moisturizerfor soft, smooth, healthy-looking skin. Choose a daily lightweight formula that provides water replenishment throughout the day for continuous comfort and moisture-balanced skin. Ultra Facial Cream, infused with Glacial Glycoprotein and olive-derived Squalane, is formulated to provide nourishing 24-hour hydration for healthy-looking skin. If you prefer your face cream include sunscreen, we recommend Ultra Face Cream SPF 30, a daily, lightweight 24-hour moisturizer that nourishes with broad-spectrum SPF 30 protection.

How To Nourish Your Skin Through Diet:

Eating Specific Nutrients to Nourish Skin:

i. Eat your vitamin E: Vitamin E helps keep your skin healthy by supporting new growth. It also protects your skin from cellular damage to a degree.
One reason it protects your skin is by beinga powerful antioxidant, which helps slow down the damage of free radicals. Free radicals are responsible for aging, as well as one of the leading causes of cancer.

- To incorporate vitamin E into your diet, eat foods like nuts and seeds, nut andseed oils, broccoli, spinach, and kiwi.

ii. Stock up on vitamin C: You probably know that vitamin C supports your immune system. As a correlation, it also helps your skin blemishes heal faster. In addition, it helps with clear, radiantskin.

- Like vitamin E, it's a powerful antioxidant.
- Citrus fruit, kiwi, mangoes, cantaloupe, leafy greens, broccoli, and peppers are just a fewfoods high in vitamin C.

iii. Lean towards omega-3 and omega-6 fatty acids: You've probably heard the myth that fat is bad for you. It's true that certain kinds of fat aren't very good for you. However, certain fats, like omega-3 and omega-6 fatty acids are not only good for you, they are essential to your overall health and your skin health.

- These fatty acids may help protect against aging.

- It's particularly important to get omega-3 and omega-6 fatty acids from your diet, as yourbody can't make them from other components like it can with other essential nutrients.
- Eat foods like nut oils, fish, leafy greens, and flaxseed to incorporate more omega-3 fatty acids into your diet. Omega-6 fatty acids are primarily found in oils, such as sunflower, corn,soy, sesame, and safflower.

iv. Get enough vitamin A: Vitamin A plays an essential role in keeping your skin healthy. Without enough of this vitamin, you can develop skin problems. In fact, many skin creams use thisvitamin in topical form, but eating it can have benefits, too.

Vitamin A is primarily found in liver, dairy foods, and eggs. Also, your body can produce vitamin A from beta carotene, found in leafy greens, carrots, peaches, and pretty much any yellow-orange fruit or vegetable.

a. Sunscreen:

Sunscreens contain chemical (organic) or physical (inorganic) compounds that act to block ultraviolet radiation, which is light with wavelengths shorter than visible light. The sun rays reachingthe earth contain three types of rays visible, ultraviolet and infrared rays. Out of these rays the UV rays having a wavelength of 280 to 400 nm are harmful to the human skin. To protect against these harmful rays the sunscreen preparations are used. These preparations protect the skin from the deleterious effect of UV rays of the sun light. In skin the melanin content protects the skin from UVradiation. The sunscreen preparations absorb the light and scatter the light. It gives a protective layerthat prevents the UV rays to reach the skin either by absorbing or by reflecting. There are materials which shows sunscreen effect are para-amino benzoic acid, its derivatives and glyceryl esters, salicylates, cinnamic acid derivatives, tannic acid derivatives, few other materials used are titanium dioxide, zinc dioxide, kaolin, Calcium carbonate.

Figure 10.1: Sunscreen

Classification of Sunscreen:

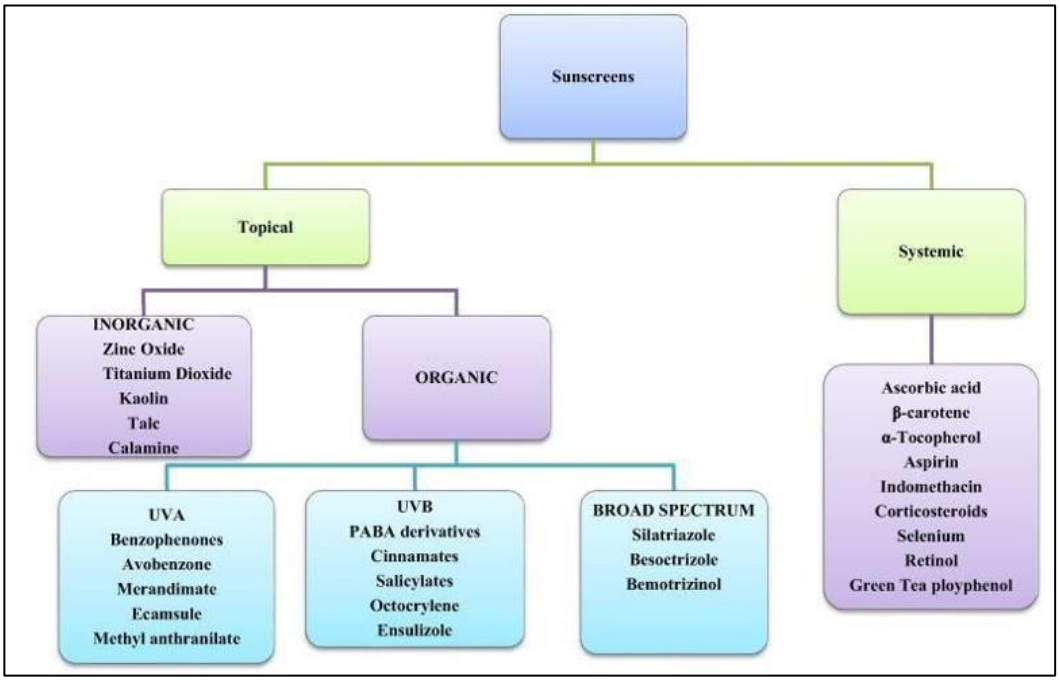

Figure 10.2: Classification of Sunscreen

Table 10. 2: Formulation

Ingredients	Quantity (%)
Cetosteryl alcohol	5
Stearic acid	2
Cetomacrogal-1000	2
Cetyl alcohol	1
Carbopol 940	0.5
Disodium EDTA	0.02
Methyl paraben	0.3
Propyl paraben	0.06
triethanolamine	0.5
water	62

C. Skin Tonic:

Originally, skin tonics were perceived as just that, tonics for the skin. Like their historical relatives, toilet waters, they were extremely variable in composition and often came with medicinal claims.

Women in the nineteenth and early twentieth centuries could make skin tonics at home using recipes published in beauty books, household encyclopaedias and newspapers using ingredients purchased through local druggists or chemists.

The idea that skin tonics could 'soothe the nerves' or 'take the fatigue out of tired muscles' is not unusual for the time. Similar medicinal claims were made for toilet waters and toilet vinegars in pastcenturies. For example, before it became a toilet water, Eau de Cologne (Cologne water) was used asa medicinal product both internally and externally to cure everything from epilepsy to worms. By comparison, claims for skin tonics were therefore subdued.

Figure 10.3: Skin Tonic

Formulation: Common ingredients used in skin tonics included alcohol, witch hazel extract, tincture of benzoin,tincture of sage, camphor and borax. Pink appears to have been the favored coloring.

Table 10.3: Formulation

Skin tonic	Percent
Tincture of benzoin	1.25
Boric acid	0.5
Glycerin	18.3
Perfume	0.2
Alcohol	40

Skin tonic	Percent
Witch hazel	9.75
Tea tree oil	q. s
Orange flower water	40

Procedure:

Dissolve the tincture of benzoin and perfume in the alcohol. Warm the witch hazel and dissolve the boric acid in it. Mix the with hazel and the orange flower water; add glycerin. Then add the tinctureand alcohol. Mix thoroughly, age, and filter.

However, many formulations were simple mixtures of perfumed water, alcohol and borax. For example, Elizabeth Arden's Ardena Skin Tonic consisted mostly of water with small amounts of ethyl (grain) alcohol, boric acid and some perfume, and Dorothy Gray's Orange Flower Skin Lotionwas made mostly of water with a little alcohol, borax and some perfume.

D. Shaving Cream:

Shaving cream or shave cream is a category of cream cosmetics used for shaving preparation. Thepurpose of shaving cream is to soften the hair by providing lubrication.

Shaving cream is a product put on the skin (primarily face and legs) to provide lubrication whichhelps prevent razor burn and discomfort during shaving. It comes in a wide variety of formats including creams, gels and most commonly foams.

Different types of shaving creams include aerosol shaving cream (also known as shaving foam), lather less shaving cream (also called brushless shaving cream and non-aerosol shaving cream), andlather shaving cream or lathering shaving cream. The term shaving cream can also refer to the latherproduced with a shaving brush from shaving soap or a lather shaving cream.

Shaving creams commonly consist of an emulsion of oils, soaps or surfactants, and water. In additionto soap, lather shaving creams include a humectant for softer consistency and keeping the lather moisturized. Brushless shaving creams, on the other hand, don't contain soap and so don't produce lather. They are an oil-in-water mixture to which humectants, wetting agents, and other ingredients are added. Aerosol shaving creams are basically lather shaving cream in liquid form with propellants,vegetable waxes, and various oils added

Table 10.4 Formulation:

Ingredients	Quantity
Triethanolamine	1.13%
Glycerine	10%
Stearic acid	28%

Ingredients	Quantity
Sodium hydroxide	1.3%
Potassium hydroxide	6.5%
Preservative	q. s
Palmitic acid	2.12%
Foaming agents	q. s

a. What Shaving Creams Do:

Shaving creams are placed on the area of the skin in which shaving will take place. The cream is spread in a thick layer where it coats the hair that will be removed. One benefit of the foam is that it lets the consumer know where they still need to shave.

The consumer (or operator) then takes a razor and slowlyruns it through the shaving cream. This removes the cream and hair. The razor is rinsed and subsequentpasses of it on the skin removes the rest of the unwanted hair.

b. How Shaving Cream Works:

Shaving cream formulations have a number of different ways in which they help in the removal of unwanted hair. One function is to soften the hair via moisturization to make cutting easier. Wet hair is easier to cut. Another function is to act as a lubricant between the razor and the skin. This inhibits cutsand knicks but does not interfere with hair removal.

While shaving creams can take many forms from liquids, lotions, gels, and creams, they all contain ingredients that help soften the hair and lubricate the skin. The primary ingredients include surfactants, solvents, humectants, conditioning agents, lubricants and aesthetic ingredients.

c. Shaving Cream Ingredients:

The most common surfactants used in shaving creams are soap-based surfactants such as Stearic Acid,Palmitic Acid, or other coconut fatty acids.

These are neutralized with TEA, NaOH, or KOH. Additional foam stabilizing surfactants may also be used such as Sodium Lauryl Sulfate. Thesurfactant system typically makes up about 10% of the formulation.

To lubricate and moisturize the skin, humectants and other conditioning ingredients are included. These can be mineral oil, lanolin, glycerin, guar gums, or a variety of polyquaternium compounds. These ingredients make up around 5-10% of the formula.

The other ingredients include aesthetic materials like fragrance, preservatives, pH adjusting materials andsometimes colorants. For aerosol systems a propellant is needed. This can be something like.

Figure 10.4: Shaving Cream

Benefits of Using Shaving Cream:

- Provides hydration to skin and hair.
- Protects skin from burns and cuts.
- Softens the hair.
- Enables a smooth shave and finish.
- Raises and lifts the hair away from the skin for a clean shave (when applied in the oppositedirection to hair growth)

Using Shaving Cream:

We've written a few steps below and have made them as short as possible.

Step 1: Add the cream to your shaving brush

If your shaving cream comes in a bowl, this makes lathering up easy.

Step 2: Add a drop or two of water (go easy)

You want a smooth consistency — you've added too much water if you see bubbles. To get the rightbalance, add a few drops of water with your fingertips.

Step 3: Cover the skin you're shaving with the cream.

Apply the cream in sections so you don't miss a spot. Don't add too much cream or your blade willget clogged and won't touch the surface of your skin in a clean sweep.

E. Vanishing Cream:

These are the creams which disappear when applied and rubbed into the skin. These are oil in water emulsions that contains large percentages of water and stearic acid or other oleaginous components.After application, the continuous phase evaporates, leaving behind a thin residue film of the stearic acid.

They provide emollient and protective action. The cream leaves a dry and tacky residual film after application. The cream contains glycerin which improves the consistency and good spread ability. The ingredient of vanishing cream contains materials like searic acid, cetyl alcohol, sorbitol syrup, propylene glycol, triehanolamine, glyceride, water, preservatives and perfume as required. Each ingredient has its cosmetic role to keep the skin natural.

Figure 10.5: Vanishing Cream

Ideal Properties of Vanishing Creams:

- High melting point
- Pure whiteness
- Very little odor and low iodine number
- Rubbed easily on the skin.

Procedure:

- Dissolve the sodium hydroxide and potassium hydroxide in water, add glycerol and preservative and heat to 80˚C.
- In another vessel, melt the stearic acid, cetyl alcohol and isopropyl myristate (oily phase) andheat to 75˚C.
- Add the alkali solution to the melted oily phase with good agitation.
- When the mixture has cooled to about 45˚C, add the perfume and continue slow mixing untilcool.
- Cover and let it stand overnight. Remix briefly next day before packaging

Table 10.5: Formulation

Ingredients	Quantity
Stearic acid	15.0 %
Cetyl alcohol	0.50 %
Isopropyl myristate	3.00 %
Sodium hydroxide	0.18 %
Potassium hydroxide	0.50 %
Glycerol	5.0 %
Water	75.82 %
Preservative	q. s
Perfume	q. s

F. Cold Cream:

Cold cream is protective to the skin. Formula contains Borax and Beeswax. It is an emulsion ofwater in oil (w/o) type. Used as moisturizer, makeup remover and cleanser.

The main principle of cold cream involves slow evaporation of water phase which leads to coolingsensation.

Borax, beeswax are used as an emulsifying agent. Borax soap is obtained by free acids in the beeswaxand borax (sodium borate). The sodium soap obtained gives oil in water (o/w) emulsion.

On storage, phase inversion occurs and water in oil (w/o) emulsion cream is formed and this is oftenknown as cold cream.

On application, due to evaporation of water, cold sensation is observed, hence, it is called as coldcream.

Oily film remaining on the skin gives emollient action and protection to the skin. Cold cream was traditionally based on a mixture of natural waxes and vegetable oils (beeswax andolive oil) stabilized with borax. At the turn of the century, mineral oil replaced the more unstable vegetable oils.

In a cold cream the proportion of fatty and oily material predominates, but application to the skinresults in a cooling effect which is produced from slow evaporation of the water contained in theemulsion.

Replacement of part of the mineral oil with up to 15% of petroleum jelly can be used to produce different textures and consistencies. Further substitution with fatty acid esters such as isopropyl myristate improves the thixotropic behavior of the cream, thus improving its spreading properties.

Figure 10.6: Cold Cream

Ideal Characteristics of Cold Cream:

- Should have optimum pH (4.6-6).
- Consistency should be optimum.
- Should not be sticky.
- Should be attractive in appearance.
- Penetration through epidermis of skin should be desirable.
- Must be non-irritant and non-inflammatory.
- Should give cooling effects.

Uses:

- It gives emollient, soothing & cooling effect.
- It protects and minimizes the effect of weather changes.
- It can be used as cleansing cream.
- It can be used through all the year.
- Not suitable for oily skin.

Table 10.6: Formulation

Ingredients	Quantity
Mineral oil (liquid paraffin)	45.0 %
Bees wax	16%
Borax	1 %
Water	Upto 100
Preservative	q. s
Perfume	q. s

Procedure:

- Heat the mineral oil and beeswax in a jacketed vessel at 75˚C and maintain heat.
- In another container, dissolve borax and preservative in water and heat to 75˚C (Aqueousphase).
- Slowly add this aqueous phase to the mineral oil-beeswax heated oily phase.
- Cool to 35˚C and add perfume.

G. Face Powder:

Though these are called face powder, but it is applied to other parts of the body. Powders and compacts are one of the important categories of skin care products. The body powders are also known as dusting powder or talcum powder. Certain medicated powders are mixed with active medicaments to prevent microbial growth on skin.

Deodorant powders and foot powders used for specific purposes. Face powders are widely used for face and body care. These are very fine particles, shining having absorbent property, adhere to skin and spreads over a large skin surface area. These powders contain talc, coloring agents, perfumes etc. to make the skin pleasant to look and touch and give smooth feeling.

The compact face powders are as same as face powders but madecompact by using a binding agent to form a loose cake. The powders used on body surface should have good covering power and hide skin blemishes. It should have good adherence, adsorbing property and keeps shining to give an elegant look. Preparation: The preparation is very simple mixing of the powders, and the perfumes is adsorbed to the calcium carbonate or magnesium carbonate. Few compositions of face powder is given in the appendix and can referred for better understanding.

Figure 10.7: Face Powder

Table 10.7: Formulation

Ingredients	Quantity (gm)
Talc	63.0
Kaolin	20.0
Calcium carbonate	5.0
Zinc oxide	5.0
Zinc stearate	5.0
Magnesium carbonate	1.0
Colour	0.5
Perfume	0.5

10.4.2 Hair Cosmetics:

Before going to cosmetics for hairs, let us have a brief discussion on hair. Hair is a vital part of the body and an added attraction on head. They are known as epidermal derivatives as they originate from the epidermis during 166 Pharmaceutics embryological development. It is an important component for the overall appeal of the appearance and personality. Good and healthy hair on the head is an attraction and beauty of the body. However, hair has to be kept clean and maintained for good health. It requires to clean the hair regularly with soap or shampoos, followed by conditioning agent and hair lotion preparation. For beautification of the hair, we use shampoos, hair oils, hair waving devices or clips, hair tonics, hair removers, various dyes and bleaching preparations.

The Functions of Hair:

Hair protects the scalp from ultraviolet light, cushion round the scalp and insulates the skull. It is onthe eyebrows to protect the eye from insects or foreign particle. It guards the nostril and ear canal from dust. It helps in evaporation of perspiration. It is also a part of sensory function. The hairs present on the head are of importance from cosmetics point of view.

A. Hair Dye:

Here are many types of hair dyes classified according to the penetration of the dye to the surface or to deep parts of the hair shaft. In this chapter, we will approach the two most used types of hair dyes:Demi-permanent and permanent dyes.

The main difference between the dyes is their capacity to reach the cortex and stay there in a permanent way or to not reach the cortex and stay shallow on the cuticle surface and be washable after about 10-15 shampoos. Those are the demi-permanent dyes. To overcome the cuticle and reach the cortex, the product must have an alkaline pH able to open the scales. Most of the times the permanent dyes use ammonia to increase the pH. Some products are referred to be ammonia-free, butinstead, they carry ethanolamine with the purpose. Both substances remove the natural cuticle lipid, the 18-metil eicosanoic acid, which confers hydrophobicity to the fiber.

The use of permanent dyes may cause cuticle damage by removing the 18-MEA and making the hair hydrophilic. Permanent hair colours are the most commonly used hair colours, because of their longevity, and ability to lighten the original darker colour. These are also superior for gray or white cover. The pigmentation is permanent and the white hair that shows after 10-15 days after the application is notdue to removal of the dye by shampoo but, instead, it is due to new hair growth. The permanent dyeing is an oxidation reaction that allows the pigments to get inside the cortex. The pigments are: Para-phenylene diamine, para-toluene diamine, and para-aminophenol, and para-aminophenol, known as the primary intermediaries) with hydrogen peroxide to liberate oxygen. And they also contain resorcinol, but this substance is gradually being removed from the ingredients in some markets, for safety reasons. Once inside the cortex, they combine with aniline dyes, to produce the required color molecules. The roots need to be touch-up after 15–30 days and the product must be applied only to the new growth. Demi-permanent dyes do not contain ammonia or ethanolamine and for this reason are gentler on thehair than the permanent colors. They also contain hydrogen peroxide, resorcinol and para-dyes. The concentration of hydrogen peroxide is lower (2%) as compared to permanent hair dyes (6%). They are not as effective in covering gray or white hair because they only reach the cuticle. They do not lighten the hair shade. Sometimes are used as products to add shine and to turn the natural hair color into a more vibrate one. Demi-permanent hair color fade away after 10–15 shampoos, or even earlier.

Adverse Reactions to Hair Dyes:

A total of 110 volunteers had suffered from adverse reactions. Of these, 67% of the volunteers had suffered from reactions within 1 h of using hairdye compared to 33% after 24 h.

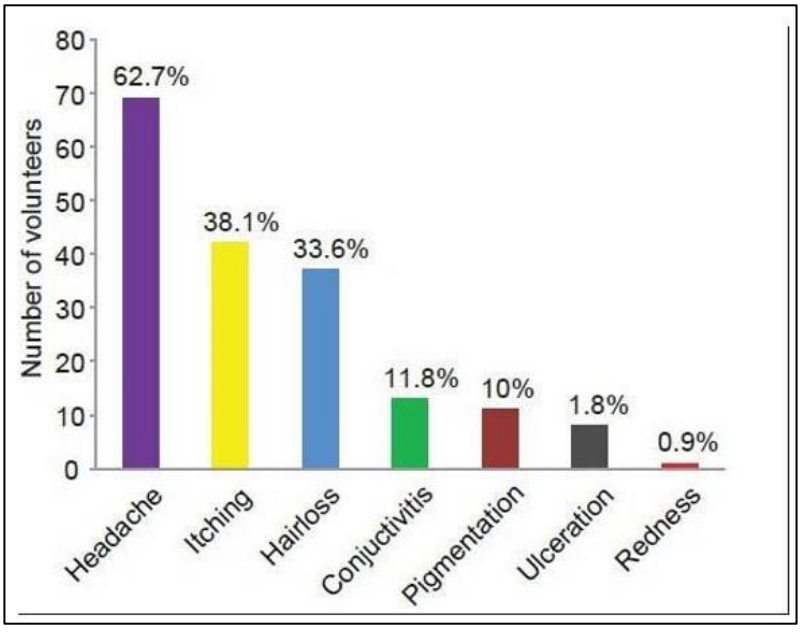

Figure 10.8: Reactions To Hair Dyes

Tablet

Figure 10.9: Hair Dye

Table 10.8: Formulation

Ingredients	Quantity (gm)
Henna	10
Indigo	20
Hibiscus	5
Amla	2
Aloe	2
Bhringraj	2
Black catechu	5
Myrobalam	2
Tea	2

B. Hair Oil:

Hair oil is an oil-based cosmetic product intended to improve the condition of hair. Various types ofoils may be included in hair oil products. These often purport to aid with hair growth, dryness, or damage.

Oil Types:

Mineral and vegetable oils are used to make a variety of commercial and traditional hair oils. Coconut oil is a common ingredient.

Other vegetable sources include almond, argan, burdock,Castor, and tea seed. Natural oils are used more commonly as cosmetic products on the scalp. Natural oils come fromnatural resources that are very high in nutrients such as vitamins and fatty acids.

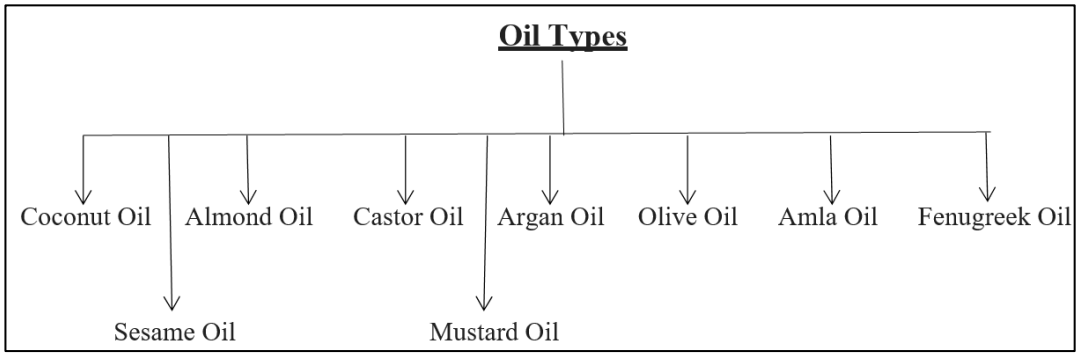

Figure 10.10: Oil Types

i. Coconut Oil:

Coconut oil has properties that reduce protein loss in hair when used before and after wash Coconutoil is known to have lauric acid, which is a type of fatty acid that may penetrate the hair shaft due toa low molecular weight and linear conformation.

Chemical composition It consists of saturated fatty acids and is one of the richest sources of mediumchain fatty acids.

The major fatty acids present are myristic acid, capric acid, lauric acid, and monolaurin.

It also contains phenolic acids and antioxidants such as tocopherol.

Figure 10.11: Coconut Oil

Table 10.9: Formulation

Ingredients	Quantity
Myristic acid	8 %
Capric acid	7 %
Lauric acid	49 %
Monolaurin	5.2 %
Phenolic acid	10 %
Tocopherol	3.72 %

Effects on Hair:

Coconut oil has been claimed to have various actions on the scalp, on the hair suchas:

Saponification – Coconut oil is a good saponification agent and so has been used in shampoos.

Antibacterial activity – Monolaurin has shown its efficacy as an antibacterial agent. It acts by disintegrating the lipid membrane of different bacteria such as Propionic bacterium acne, Staphylococcus aureus, Staphylococcus epidermidis. Coconut oil in concentrations of 5% to 40%(w/w) exhibited bactericidal activity against Pseudomonas aeruginosa, Escherichia coli, Proteus vulgaris, and Bacillus subtilis.

Antifungal activity – Monolaurin exhibits antifungal activity.

Emollients – Coconut oil forms a coating over the hair shaft, thereby sealing the cuticle and traps themoisture inside.

Lubricant – It provides increased slip in between the hair strands, so detangles the hair, smoothensand flattens the cuticle surface which improves the health and appearance of the strands.

Preventing protein loss – Due to its low molecular weight and straight linear chain it is able topenetrate inside the hair shaft thereby, preventing loss of protein from the hair.

ii. Almond Oil:

The oil is obtained from fruits of Prunus amygdalus which is native to Middle East and SouthAmerica.

In Ayurveda this oil has been known to have aphrodisiac property. Chemical composition It consists of mono saturated fatty acid, polyunsaturated fatty acid (linoleicacid) and Oleic acid. It also consists of linolenic acid, stearic acid, palmitic acid. It is also a rich source of vitamin E.

Figure 10.12: Almond Oil

Table 10.10: Formulation

Ingredients	Quantity
Palmitic acid	9.3
Palmitoleic acid	0.3
Stearic acid	1.8
Oleic acid	69.7
Linoleic acid	18.2
Linolenic acid	0.7

Effects on hair:

Protection against ultraviolet (UV) damage – Almond oil has fatty acids that are rich in doublebonds and hence has shown to protect against UV radiation induced structural damage.

Emollient – It has emollient property, and hence can be used to soften and moisturize dry hair.

Elasticity – It has been reported to increase the elasticity of the hair as it fills the gap between cuticlecells

Protein loss – The oil has no favorable impact on protein loss as it is not able to penetrate inside thehair shaft.

iii. Castor Oil:

The oil is from the seeds of a Ricinus communis that is found in all tropical and sub-tropical countries and is the major producer among all. The oil is filtered and steamed to remove ricin a toxiccomponent in the oil that causes rancidity of the oil.

They are rich in vitamin E, protein, and minerals. They moisturize and soften the hair maintainingthe moisture level in the hair.

Chemical composition It consists glycerides of isoricinoleic acid, ricinoleic, dihydroxy-stearic acid,stearic acid, eicosanoic acid, linolenic acid, palmitic, and linolenic acid.

Figure 10.13: Castor Oil

Table 10.11: Formulation

Ingredients	Quantity
Ricinoleic acid	74.10
Oleic acid	7.55
Linoleic acid	10.32
Stearic acid	2.81
Palmitic acid	2.59
Eicosanoic acid	0.93

Effects on Hair:

Castor oil is popular as hair oil, with the following actions:

Moisturizing effect – Ricinoleic acid and its derivatives present in the oil have moisturizing quality.

Nourishing effect – The fatty acids have very good penetrability and have been claimed to providenourishment to the hair follicle.

Germicidal and fungicidal effect – Ricin and ricinoleic acid present in the oil protects the scalp andthe shaft of the hair from fungal and microbial infections.

In androgenetic alopecia – Ricinoleic acid has been shown to penetrate skin and act as an inhibitor of prostaglandin D2 synthase (PGD2). Ricinoleic acid has a two-dimensional structure, which is verysimilar to the prostaglandin family and has also been demonstrated to have some degree of effect on hair growth.

iv. Argan Oil:

The oil is obtained from the kernels of Argania spinose found in the desert regions of Morocco. Thekernels are roasted, cooled and grinded to get the oil. The oil is allowed to stand and then decanted, filtered to remove any impurities. Conventionally, it has been used in cooking, in the treatment of skin infections and in skin and hair products. In the last 15 years, Argan oil has emerged as an important ingredient of many cosmeceuticals' products. It is excellent oil for healthy hair. Argan oil is rich in antioxidant and repairs damaged hair. It also rich in fatty acid and vitamin E. It also known as Moroccan oil. It protects hair against damage fromUV rays and heat. It also moisturizers and smoothens hair, making it soft and manageable and imparting a lustrous shine.

Figure 10.14: Argan Oil

Chemical composition It is composed of monosaturated (80%), saturated (20%) fatty acids. It contains sterols, polyphenols, tocopherols, triterpene alcohols, squalene, palmitic, stearic, linolenic,and linoleic acid.

Ingredients:

- Sterols
- Polyphenols
- Tocopherols
- Triterpene alcohol
- Squalene
- Palmitic acid
- Stearic acid
- Linolenic acid

Effects of Argan oil are:

Sebostatic – The high oleic acid content has been found to have regulatory effect on sebum secretion.

Moisturizing effect – The oil is considered to have a very good water holding capacity.

Increase in elasticity – Topical application of Argan oil has shown statistically significant increasein gross elasticity, net elasticity, and biological elasticity at 2 months compared to baseline.

v. Olive Oil:

It is extracted from the pericarp of fruits of Olea europoea from the plant's native to Mediterranean countries. The seeds of the fruit are pressed lightly to extract the oil. This oil is mixed with water toremove any impurities. Unsurprisingly, olive oil has been used in hair cosmetics and as a skin product since a long time in several cultures.

It is highly moisturizing hair oil rich in vitamin E which is very important in hair growth. It containsanti-inflammatory property. It helps in treating dandruff and reducing hair fall. It has exfoliating anddandruff fighting properties when combined with lemon juice. It is useful for damaged, dull, and dryhairs. It protects against heat damage imparts shine, moisturize and gives damaged and broken hair a healthy appearance.

Chemical Composition:

The oil contains arachin, linolein, and palmitin. However, the main component is olein. It also contains sterols, carotenoids, triterpenic oils, and phenolic compounds.

The virgin olive oil is a rich source of antioxidants that contains flavonoids, lignans, and secoiridoids.

Figure 10.15: Olive Oil

Effects on Hair:

Emollient effect: Olive oil has an emollient function by sealing the cuticle and trapping the moisture inside; however, coconut oil remains superior in this regard.

Photo protection: Olive oil is protective against UVB due to the presence of extra virgin olive oil.Hydroxytyrosol, one of the key polyphenolic components of olive oil, has been studied recently for its effects on UV-A induced cell damage and has shown to combat reactive oxygen species (ROS) induced by UV light.

Antifungal effect: Olive oil has a definite inhibitory influence on the ability of the fungus Microsporum gypseum and Trichophyton vanbreuseghemii to penetrate the hair. The effect may be specific or purely a result of "mechanical barrier." A recent study showed the antifungal activity of the aliphatic aldehydes in olives - hexanal, nonanal, (E)-2-hexenal, (E)-2-heptenal, (E)-2-octenal and (E)-2-nonenal-against six strains of Trichophyton mentagrophytes, one strain of Microsporum canisand seven strains of Candida spp

In psoriasis: Olive oil has shown promising results when used in combination with different ingredients. A mixture of honey, olive oil, and beeswax mixture (1:1:1) has demonstrated significantimprovement in the symptoms such as redness, scaling, thickening, and pruritis. This is due to its antioxidant action and hydroxyl tyrosol-induced apoptosis and inhibition of cell proliferation.

vi. Amla Oil:

It is also known as the Indian gooseberry. It is obtained from deciduous tree Emblica officinalis widely found in India. It is grown in Gujarat, Uttar Pradesh, Maharashtra, and Rajasthan. It is therichest source of Vitamin C

Figure 10.16: Amla Oil

Effects on Hair:

Antifungal effect – Amla oil is fungicidal to M. canis, M. gypseum, Trichophyton rubrum at 0.5%concentration. The effect is due to the presence of unsaturated C18 fatty acids.

Graying of hair – Graying of hair is thought to be mediated through ROS leading to damage of themelanocytes, thereby leading to decreased pigmentation. Amla oil, because of the presence of Vitamin C, gallic acid, ellagic acid, and tannins can absorb ROS.

Anti-microbial – Amla oil has shown potent antibacterial activity against E. coli, Klebsiella pneumonia, Klebsiella ozaenae, Proteus mirabalis, P. aeruginosa, and Salmonella typhi.

vii. Fenugreek Oil:

Fenugreek (Trigonella foenum graecum L) is also known as Greek hay and is known as Bockshornklee in Germany. In India, fenugreek is grown as a cover crop as the plant grows quickly.It is a leguminous herb about 2 feet height. The major producers are Rajasthan, Gujarat, Uttar Pradesh, and Tamil Nadu.

Chemical composition Diosgenin is a steroid sapogenin which is found in fenugreek. Other sapogenins found in yamogenin, gitogenin, tigogenin, and neotigogens. It also contains alkaloidssuch as trigonelline, gentianine, and carpine compounds.

Figure 10.17: Fenugreek Oil

Table 10.12: Formulation

Ingredients	Quantity (gm)
Fenugreek seeds	10
Hibiscus	10
Curry leaves	8
Black cumin	10
Castor oil	20
Coconut oil	40

Effects on Hair:

Androgenetic alopecia – Fenugreek seeds have received wide publicity in social media as an antiandrogen of plant origin. While the possible mechanism of action is not properly known, diosgenin in fenugreek has been shown to have oestrogenic activity which may lead to inhibition ofdihydrotestosterone. Flavonoids and Trigonelline cause vasodilation in the scalp. Flavonoids have also been shown to have anti-inflammatory and anti-proliferative effect.

Anti-fungal effect – It has fungicidal effect against Trichoderma viride, Aspergillus niger, Aspergillus oryzae and Aspergillus flavus. It also has effect against harmful pathogenic fungi -Fusarium graminearum

Bactericidal activity – The seed extracts are effective against E. coli, S. typhi and S. aureus.

Pityriasis sicca – A study done by Verma et al., demonstrated that the 1 ml of fenugreek extract with3 ml of water (1:4) was found to be effective in declining the Malassezia furfur

Emollient – Fenugreek has lecithin which is a natural emollient and helps in strengthening andmoisturization of hair.

viii. Sesame Oil:

It is also known as til oil in India. It is indigenous to India, commercially produced in Gujarat, Orissa, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Rajasthan, Punjab, Karnataka. It is also found in Egypt, Middle East, and China. The seeds of Sesamum indicum are pressed to obtain oil.

Chemical composition Sesame oil contains Palmitic acid, oleic acid, linoleic acid, linolenic acid, gandoleic acid, behenic acid, stearic acid, and arachidic acid. It contains high amounts of sesamolin,sesaminol, sesamin. Sesamol provides stability to the oil. It also contains sesame lignans.

Figure 10.18: Sesame Oil

Effects on hair:

Anti-inflammatory properties – The lignans present in sesame oil have anti-inflammatory properties.

Antioxidant effect – Sesame oil is resistant to oxidative deterioration because of the presence of endogenous antioxidants such as sesamolinol, sesaminol. A significant in vivo, antioxidant activity of sesamolin came from its metabolites, sesamolinol and sesamol, when sesamolin wassupplemented in rats' diet.

UV-induced damage – It has been seen in a study done on rats that tocopherol + tocotrienol + sesamin extract significantly reduced the UV-induced damage. It forms a protective coat around thehair, thereby preventing hair damage.

Anti-bacterial effect – Sesamin has been found to have remarkable antibacterial activity against E. coli, S. aureus, P. aeruginosa, Shigella flexneri. The minimum inhibition concentration for all these organisms were.

<0.1%. The antibacterial activity of Sesamin is mainly due to bactericidal effect rather than bacteriostaticeffect.

Moisturizing agent – It moisturizes the hair follicle and prevents dryness. It has enhanced penetrationcapacity.

Hair growth – As the oil has enhanced penetration and reaches up to the hair follicle, it increases thecirculation of the scalp, thereby increasing hair growth and reduce graying of hair.

ix. Mustard Oil:

Mustard oil, from the seeds of plant Brassica nigra is cultivated in India, China, Canada, and Englandand is known as sarson ka tel. Chemical composition It consists of arachidic, behenic, linoleic, linolenic, oleic, palmitic, erucic, lignoceric, and myristic acid. It also consists of carotenoids, tocopherol, and sinigrin.

Figure 10.19: Mustard Oil

Table 10.13: Formulation

Ingredients	Quantity
Erucic acid	42 %
Oleic acid	12 %
Palmitic acid	3 %
Stearic acid	2.4 %
Arachidic	0.5-1.1 %
Behenic	0.6-2.1 %
Lignoceric	0.5-1.1 %
Elcosenoic	8.4 %

Effects on hair:

Antioxidant property: It contains amino acids, cysteine which acts as antioxidant. Cystieneprotects the body from free radicals which damage DNA and cell membranes.

Acts a sunscreen: Due to its thick consistency and high vitamin E, topical application of oilprotects against harsh UV rays.

Antifungal: Mustard oil significantly inhibits the penetration of T. mentagrophytes in the hair butis less effective in comparison coconut and amla oil against the fungus.

Antimicrobial: It has a broad-spectrum antimicrobial activity and has shown activity against S.aureus, E. coli, and C. albicans. The action may be due to the presence of phenol, flavonoids, alkaloids, sterols, and terpenes which may be responsible for antimicrobial activity.

C. Hair Cream:

A hair cream is a moisturizing cream for the hair. It helps remove frizz from hair, tame fly away, and make them smooth and shiny. As the hair cream is typically a leave-in product, it keeps the hairmanageable and healthy throughout.

Hair cream, commonly termed as styling cream, adds natural shine to rough hair. It smoothens thetamed hair and holds them well so that they don't fall. In simple words, it removes frizz and fly-a ways without making them heavy. However, high maintenance and party wear styles like spikes, mohawks and pompadours are notpossible with creams. That require a stickier wax kind of a thing found in styling gels.

Cream is for casual and natural finish that styles while nourishing. Hair creams are not solid like wax, or sticky like a gel, they are thick creams that works for all hair types. Hair cream is especiallya boon for curly and long unmanageable mane that gets easily entangled. Applying cream boost the curls or wavy hair without weighing them down.

Hair creams can be used before and after shampoo.

If you are applying it before shampoo, use it like any other oil, the cream strengthens the roots,conditions the hair, prevents hair fall and also promotes hair growth.

a. Take a dab of cream in your palm and using fingers apply directly on the roots as well as hair.
b. Give a gentle massage for a minute or two and leave the cream on your hair and scalp for at least30 minutes before wash.

If using after shampoo, apply hair cream after you towel dry your wet hair. Take some cream on yourpalm and after rubbing, run the hair cream through damp hair. Evenly cover all hair and style as desired using fingertips, scrunch for curly styles or smooth down with a brush for a straight look.

Figure 10.20: Hair Cream

Procedure For Extracion:

The finely powdered material undergoes the Soxhlet extraction method by using hydroalcoholic solvent (70%ethanol and 30%water) for a duration of three successive days (72hrs) the temperatureshould not exceedingly more than 100◦C. The dark green color hydroalcoholic extract was collected, filtered and the filtrate was subjected to concentrate under reduced pressure using rotatory vacuum evaporator. The concentrated product was freeze dried and the product was finally used for further experimental studies. The same procedure was followed for the crude drug ashwagandha, bhringrajand hibiscus.

Procedure For Formulations:

Oil in water (O/W) type herbal hair cream was fixed for the study. The emulsifier (stearic acid) and the other oil soluble components (bees wax,lanoline, cetyl alcohol, Nigella sativa oil, Olea europea) were dissolved in the oil phase (part A).

The other water-soluble components (extract of Eclipta Alba, Withania Somnifera, Hibiscus Rosa Sinensis) and triethanolamine were dissolved in the aqueous phase (part B). Both the mixture A and B heated in a water bath until reaches 700C, aqueousphase was mixed with oil phase with constant stirring. Finally add preservatives and perfume.

Table 10.14: Formulation

Ingredients	Quantity (%)
Eclipta Alba extract	1
Hibiscus rosa sinesis extract	1
Withania somnifera extract	1
Stearic acid	5
White bees wax	2
Cetyl alcohol	4
Lanoline	1
Black cumin oil	1
Olive oil	4
Methyl paraben	0.02
Propyl paraben	0.01
Triethanolamine	2
Perfume	q. s
Water	Upto 100

D. Hair Gel:

Hair gels are a go-to solution for girls when it comes to styling hair or trying a new hairstyle. Hair gels can maintain your hairstyle without changing its texture. Some hair gels give your hair moistureand healthy nutrients while some do not. An ideal hair gel maintains a firm grip even when the weather changes. However, before spending money on hair gels, always check the ingredient presentin them to be sure they won't harm your hair.

Hair gel is a styling product designed to create movement and hold hair in place. It can also be usedto slick hair back or tame flyaway pieces. Styling gels are great way of adding texture, body and shine and can be found in different strengths.

Hair gel is a hair styling product that is used to stiffenhair into a particular hairstyle. Hair gel is composed of mostly water and may contain humectants, proteins, conditioners and oils. There are many types of hair gel. Gels can hold moisture and protectthe hair, enhance and define curls, lengthen the hair, style hair into place, control frizz, create a flexible hold, add body and shine, provide help with manageability of the hair and provide a smoothcomb through. Hair gels are perfect for most hair types and can be applied to wet or dry hair. Gel holds very well with minimal white residue, and it can last up to seven days if any protect hair at night.

Figure 10.21: Hair Gel

Table 10.15: Formulation

Ingredients	Quantity
Guar gum	2 gm
Distilled water	85 ml
KOH	1 ml
Methyl paraben	200 mg
Jatamansi	100 mg

Procedure:

Preparation of KOH Solution 1g of pellet dissolved in 5ml water. Take 2g of guar gum in a mortarand pestle, to this add 85ml of distilled water with continuous stirring until forms a gel like consistency, to this add 100mg of Jatamansi extract and mix it properly. Then add 1 drop of KOH solution and 200mg of methyl paraben.

E. Shampoo:

Shampoo is a basic hair care product representing the largest segment of hair care cosmetics. Shampoo is typically in the form of a viscous liquid with some exception of waterless solid form such as a bar. Shampoo was developed to replace soap for cleansing scalp and hair by removing unwanted sebum, dandruff, environmental dust, and residues of hair care products. Most of the dirt including sebum are water insoluble and cannot be effectively removed by water alone. Therefore, ashampoo containing a combination of surfactants is necessary. The content of surfactants in a shampoo is typically between 10% and 20%.

How Shampoo Works:

Shampoo cleans by stripping sebum from the hair. Sebum is an oil secreted by hair follicles that isreadily absorbed by the strands of hair and forms a protective layer. Sebum protects the protein structure of hair from damage, but this protection comes at a cost. It tends to collect dirt, styling products and scalp flakes. Surfactants strip the sebum from the hair shafts and thereby remove thedirt attached to it. While both soaps and shampoos contain surfactants, soap bonds to oils with such affinity that it removes too much if used on hair. Shampoo uses a different class of surfactants balanced to avoidremoving too much oil from the hair. The chemical mechanisms that underlie hair cleansing are similar to that of traditional soap. Undamaged hair has a hydrophobic surface to which skin lipids such as sebum stick, but water is initially repelled. The lipids do not come off easily when the hair is rinsed with plain water. The anionic surfactants substantially reduce the interfacial surface tension and allow for the removal of the sebum from the hair shaft. The non-polar oily materials on the hair shaft are solubilized into the surfactant micelle structures of the shampoo and are removed during rinsing. There is also considerable removal through a surfactant and oil "roll up" effect. The foamy effect achieved by massaging shampoo into the hair is purely aesthetic.

Shampoo Formulations Seek to Maximize the Following Qualities:

- Easy rinsing
- Good finish after washing hair.
- Minimal skin/eye irritation
- No damage to hair
- Feels thick and/or creamy.
- Pleasant fragrance
- Low toxicity
- Good biodegradability
- Slightly acidic (pH less than 7), since a basic environment weakens the hair by breaking the disulfide bonds in hair keratin.

Figure 10.22: Conditioning Shampoo

Table 10.16: Formulation

Ingredients	Quantity (%)
Sodium laureth sulphate	16.0
Cocamidopropyl betaine	2.0
Cocamide MEA	2.0
Glycol distearate	1.5
Dimethicone	1.0
Guar hydroxypropyltrimonium chloride	0.5
Citric acid	q. s
Sodium chloride	q. s
Preservatives	q. s
Perfume	q. s
Water	100

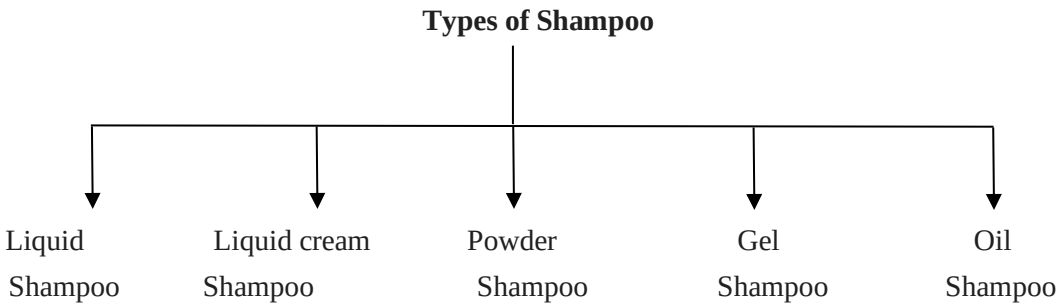

Table 10.17: Liquid Shampoo

Ingredients	Quantity
Triethanolamine lauryl sulphate	45.0 gm
Coconut monoethanolamine	2.0 gm
Water	53.0 gm
Perfume	q. s
Preservative	q. s
Colour	q. s

Table 10.18: Liquid Cream Shampoo

Ingredients	Quantity
Sodium lauryl sulphate 30%	25.0 gm
PEG 400 distearate	5.0 gm
Magnesium stearate	2.0 gm

Ingredients	Quantity
Water	68.0 gm
Oleyl alcohol	Q. s
Perfume	q. s

Table 10.19: Powder Shampoo

Ingredients	Quantity
Henna powder	5 gm
Borax	15 gm
Sodium carbonate	25 gm
Potassium carbonate	5 gm
Soap powder	50 gm
Perfumes	q.s

Table 10.20: Gel Shampoo

Ingredients	Quantity
Sodium lauryl sulphate	20.00 gm
Coconut monoethanolamide	1.0 gm
Propylene glycolmonostearate	2.0 gm
Stearic acid	5.0 gm
Sodium hydroxide	0.75 gm
Water	71.25 gm
Perfume	q. s

Table 10.21: Oil Shampoo

Ingredients	Quantity
Sulphonated olive oil	16.0 gm
Sulphonated castor oil	16.0 gm
Water	68.0 gm
Perfume	q. s
Preservative	q. s
Colour	q. s

F. Hair Removing Cream: Hair removal cream known as Depilatory creams. The main ingredient in hair removal cream is thioglycolic acid. The hair is removed by causing instability the keratin structure with depilatory creams. These are the proteins in the hair. The hair is first thinned and then dissolved into a jelly-likeconsistency and it can be broken off and wiped away.

Advantages:

- The best thing about depilatory creams is that they offer painless hair removal, as comparedto threading, plucking, waxing or shaving.
- The hair is dissolved and washed off with the cream, going down the drain without causing amess.
- Depilatory creams are available in all cosmetic stores and are an affordable and pain less hairremoval option.
- The cream doesn't damage the skin or cause cuts, the way shaving can.
- Easy to use and commonly available.
- Can be done at home.
- Since the creams help remove hair below the surface of the skin, regrowth takes longer tobecome noticeable.

Disadvantages:

- Chemicals contained in the creams can cause irritation and discomfort.
- Depilatories are known to have strong odours from the chemicals used.
- Risk of ingrown hairs.
- Should not be used on sensitive skin areas.

Steps:

a. Apply a thick, even layer over the hair you want to remove:

- Use your fingers or a spatula, if provided. Do not **rub** the cream into your skin, just spread it. Washyour hands immediately if you apply with your fingers.
- Uneven application means your hair could come off in patches, leaving you with spots ofhair, which is probably not the look you're going for.
- Never apply a hair removal cream to your nostrils, ears, the skin around your eyes (includingyour eyebrows), genitals, anus, or nipples.

b. Leave the cream on for the amount of time recommended in the directions: This can be anywhere between three to ten minutes, though the time rarely exceeds ten minutes. Most directions recommend checking a small area about halfway through the process to see if hair comes off. The shorter the amount of time the depilatory cream is in contact with your skin, the lesslikely you are to develop redness or irritation.

- Because you can really harm your skin if you leave the cream on too long, set an egg timer oruse the timer on your phone to make sure you don't exceed the limit.
- Some tingling is normal, but if you start to feel burning, see redness or irritation, remove thecream immediately. Depending on your reaction, you may want to call your doctor for advice on how to treat your skin.
- You may notice a bad smell while you are using the cream. That's a normal side effect of thechemical reaction that is breaking down your hair.

c. Remove the cream with a damp washcloth or spatula if provided: Wipe gently--don't rub the cream. Rinse the area with warm water to make sure the cream has beenremoved entirely. If you don't rinse off the residue, the chemicals could continue to react with your skin and cause a rash or chemical burn.

- Pat, don't rub, your skin dry.
- Apply a moisturizer to the area to keep it smooth and hydrated.

d. Don't worry if your skin is a little red or itchy after use--that's normal: Wear loose clothing right after using the cream and don't scratch the area. If the redness anddiscomfort continue after a few hours or gets worse, call your doctor.

e. Read the directions that came with the cream and follow them exactly: Different brands and different products within that brand will have different instructions. One type of hair removal might take only three minutes, while another might take ten. Following the directions will give you the best results and help protect your skin.

- If you lost the directions that came with your cream, you can find them on the bottle or tube.Otherwise, check the company's website. They should have instructions for each kind of cream.
- Check the "use by" date to make sure your cream is not expired. An expired depilatory creamwill not work very well and give you poor results.

f. Observe any warnings in the directions, such as avoiding sunbathing, swimming, andtanning for 24 hours.

- You should also wait 24 hours to use anti-perspirant or products with fragrances.
- You should not shave or use a hair removal cream in the same area for 72 hours after use.

Figure 10.23: Hair Removing Cream.

Figure 10.24: Hair Removing Methods.

Ideal Depilatories Preparation Should Be:

- Non-toxic and non-allergic to the skin
- Selective in action
- Easy to apply.
- Efficient and rapid action in few minutes
- Odorless
- Stable
- Non-staining to clothing
- Relatively pain free.

10.4.3 Eye Cosmetics:

A. Eye Liners:

Eye liner or eyeliner is a cosmetic used to define the eyes. It is applied around the contours of theeye(s). It is often used to create various aesthetic effects.

Eye liner is commonly used in a daily make-up routine to define the eye or create the look of a wider or smaller eye. Eye liner can be used as a tool to create various looks as well as highlighting different features of the eyes.

Eye liner can be placed in various parts of the eye to create different looks with a winged eye liner or tight lined at the waterline. Eye liner can be drawn above upper lashes or below lower lashes or both, even on the water lines of the eyes. Its primary purpose is to make the lashes look lush, but it also draws attention to the eye and can enhance or even change the eye's shape. Eye liner is available in a wide range of hues, from the common black, brown and grey. to more adventurous shades such as bright primary colors, pastels, frosty silvers and golds, white andeven glitter-flecked colors. Eyeliner first used in Ancient Egypt and Mespotamia as a dark black line around the eyes. It was then often used by Arab women.

In the 21st century, heavy eyeliner has been associated with Gothicfashion. In Japan, thick eyeliner is worn for festivals. It has broadened its appeal to the male market, known commonly as guyliner.

Figure 10.25: Eyeliner

Characteristics of Eyeliners:

- Non-irritant to eye
- Liquid eyeliners: dry quickly
- Easy to apply.
- The formed film should have flexibility.
- Should look attractive.
- Should not spoiled or not come- off with tears or sweat.
- Pigments: no separation or partition
- Less or no microbial contamination

Types:

- **Liquid eye liner: -** Is an opaque liquid that usually comes in a small bottle. Is applied witha tiny brush or felt applicator. It creates a sharp, precise line. Precise and dramatic strokes canbe achieved by using liquid eyeliner.
- **Gel eye liner: -** Less commonly found. Is a softer gel liner that can be easily applied withan eyeliner brush. It can be precisely applied and is much softer than Kohl.
- **Wax-based eye pencils: -** Are softer pencils and contain waxes that ease application. They come in a wide variety of intense colors as well as pale shades such as white or lightbrown. Wax-based eyeliners can also come in a cone or compact with brush applicator.
- **Kohl – eyeliner :-** is a soft powder available in dark matte (dull) shades. It is most often used in black to outline the eyes. It comes in pencil, pressed powder, or loose powder. The best tool to apply eyeliner is the sponge application.

Table 10.22: Formulation

Ingredients	Quantity (%)
Mineral oil	5
Colour	30
Titanium dioxide	5
Veegum	2.5
Pvpk.30	2

Ingredients	Quantity (%)
Water	85.5
Pigment	10
Preservative	q. s

B. Eye Shadow:

Eye shadow for evening wear is also include glittering (impressive) metallic particles which produces silver or gold effect.

Eye shadow may be either in solid or liquid paste form.

Solid: powder compact type, oil-based stick type or pencil typeLiquid: oil-based paste or emulsion (o/w or w/o).

General types: – Cream type – Stick type – Pressed powder type – Liquid type

Figure 10.26: Eye Shadow

Characteristics of Eye Shadow:

- Good skin adhesion (sticking) power
- Easy to apply.
- Not show oily shine after application
- Formulation not smudged (dirty or filthy) by sweat or sebum.
- Maintain good appearance.
- Non-irritant
- Safe

Types:

i. Cream Eye-shadow: Are liquefying cream or emulsion. Liquefying cream is prepared withfats & waxes. Bees wax, lanolin, petroleum jelly, spermaceti, ceresin are the main ings. Odorless cocoa butter also available in some formulation.

Table 10.23: Formulation

Ingredients	Quantity
Bees wax	4 %
Spermaceti	7.5 %
Lanoline	7.5 %
Cosmetic lake	q.s
Cocoa butter	2 %
Zinc oxide	30 %
Petroleum jelly	50 %
Preservative	q. s

ii. Stick Eyeshadow: These are manufactured same as lipsticks. High proportion of waxes areused. The base used should – evenly distributed on skin – Non greasy – Non sticky.

Table 10.24: Formulation

Ingredients	Quantity
Bees wax	6 %
Isopropyl myristate	20 %
Lanoline	5 %
Cetyl alcohol	4 %
Oletl alcohol	6 %

iii. Powder Eyeshadow: Prepared same as loose powder or compact powder. Can apply easily.Also blend on eyebrow & does not readily form into lines. Multiple colors are available in the same.

Table 10.25: Formulation

Ingredients	Quantity
Talc	45 %
Magnesium myristate	40 %
Pigment	5 %
Tio2	15 %

Ingredients	Quantity
Perfume	q. s

iv. Liquid Eyeshadow: - In these pigments can be dispersed in the mixture of oils or in a liquidemulsion. Preparations must be shake well before use.

Table 10.26: Formulation

Ingredients	Quantity
Mineral oil	6 0%
Isopropyl myristate	22 %
Preservatives	q.s %
Pigments	q.s %
Corn oil	18 %

C. Mascara:

Mascara is a cosmetic commonly used to enhance the upper and lower eyelashes. It is used to darken, thicken, lengthen, and/or define the eyelashes. Normally in one of three forms—liquid, powder, or cream—the modern mascara product has various formulas; however, most contain thesame basic components of pigments, oils, waxes, and preservatives. The most common form of mascara is a liquid in a tube with an application brush. It is most commonly used eye cosmetic.

Figure 10.27: Mascara

Different Types of Mascara:

- Lengthening mascara
- Thickening mascara
- Curling mascara
- Lash defining mascara.
- Non clumping mascara

Ideal Properties:

- It is easy to apply and capable of even application.
- Should not cause smudging.
- Should not cause eyelashes to stick together.
- Should be non-toxic and non-irritant.
- Should be easy to remove.

Table 10.27: Formulation

Ingredients	Quantity (%)
Gelatin	2.0
Stearic acid	5
Triethalonamine	5
Glyceryl monostearate	10
Petroleum	20
Bees wax	25
Prepared lamp black	8
Water	15

Procedure:

- Soak the gelatin in hot purified water.
- Melt the bees wax, petrolatum and glyceryl monostearate and it is stirred thoroughly withlamp black.
- Add triethanolamine to the soaked gelatin and then add the mixture to the melted mass.
- Stir continuously to obtain uniform creamy mascara.

D. Eyebrow Pencil:

Eyebrow pencils are used to apply color, fill in gaps and define the eyebrows, creating a more defined shape, outline arches and/or make uneven brows appear more symmetrical. The pointedpencil tip can create a hair-like effect when filling in gaps or sparse areas. Eyebrow pencils are carefully designed to include ingredients that help prevent the growth of potentially harmful microorganisms. Product safety adheres to the principles of quality assurance (QA) and good manufacturing practices (GMP), including testing the compatibility of products withpackaging and shelf-life stability. Manufacturers conduct extensive safety tests to ensure these products are safe and continue monitoring their safety in the marketplace by tracking consumer injury reports or comments/questions. It is important to read the product label and follow the directions. Children should only use these products under close adult supervision. For questions about product use, check the product label forthe manufacturer's contact information or the company website to reach the company directly.

Figure 10.28: Eyebrow Pencil

E. Kajal Pencil:

The texture of the kajal pencil is very soft, smooth and creamy and there is no tugging or pullingwith this kajal pencil.

It glides effortlessly on the upper lash line as well as waterline.

The pigmentation is pretty good; it comes out as a deep black color.

The color being black instantly highlights the eyes and makes them appear beautiful.

The kajal pencil has an impressive, long-lasting power. The formula stays in place intact, for hours.It does not bleed, crease nor does it smudge.

Figure 10.29: Kajal Pencil

Advantages:

- Not expensive
- Packaging is so good
- Retractable twist up pencil
- Soft and glides easily
- Good pigmentation
- Smudge proof
- Waterproof
- Dermatologically tested.

Disadvantages:

- Not deep rich darkest black. One may find maybeline darker than this.
- You cannot create a smokey look with this pencil.
- Takes a long time to remove, even with a makeup remover.
- Not a full 10 hour stay, as it fades slightly.

10.4.4 Dental and Oral Cavity Cosmetics:

A. Toothpaste:

Toothpastes have been used since the ancient past and are one of main irreplaceable components of oral health care. The design of toothpaste formulations began in China and India, as 300-500 BC. During that period, squashed bone, pulverized egg and clam shells were utilized as abrasives as apart of tooth cleaning. Modern toothpaste formulations were developed in the 19th century. Later on, chalk and soap were incorporated to those formulations. After 1945, several formulation advancements of different detergents had begun; sodium lauryl sulfate had been used as emulsifying agent. In recent years, the focus has shifted towards the release of active ingredients during formulation developments to prevent and /or treat oral illness. Toothpaste is a dentifrice used to clean, maintain and improve the health of teeth. Toothpaste is mainly used to promote oral cleanliness and also acts as an abrasive that helps to prevent the dental plaque and food particles from the teeth, aids in the removing and/or veiling of halitosis and releases active ingredients such as fluoride to aid in preventing tooth and gum disease (e.g. Gingivitis)

Toothpastes are complex mixtures of abrasives and surfactants; anticaries agents, such as fluoride; tartar control ingredients; pH buffers; humectants (to prevent dry-out and increase the pleasantmouth feel); and binders, to provide consistency and shape. Binders keep the solid phase properly suspended in the liquid phase to prevent separation of the liquid phase out of the toothpaste. They also provide body to the dentifrice, especially after extrusion from the tube onto the toothbrush. It is the responsibility of the oral care professional to understand the ingredients in toothpastes and direct patients to different products based upon their individual needs.

Figure 10.30: Colgate

Ideal Properties of Toothpaste:

- Good abrasive effect
- Nonirritant and non-toxic
- Impart no stain in tooth.
- Keep the mouth fresh and clean.
- Prolonged effect
- Cheap and easily available

Table 10.28: Formulation

Ingredients (gm)	Quantity (W/W) %	Role
Guar gum	0.5	Laxetive
Tulsi leaves oil	0.8	Prevent bad breath
Clove oil	0.2	Antibacterial
Neem leaves oil	0.2	Antibacterial
Sodium chloride	2	Anti Cavities
Calcium carbonate	50	Abrasive
Xylitol	0.2	Anti tooth decay
Methyl Paraben	0.2	Preservative
Menthol	0.1	Cooling agent
Titanium dioxide	0.5	Whitening agent
Sodium Lauryl sulphate	2.5	Detergent
Glycerine	30	Humectant
Amranth solution	0.1	Colouring agent
Water q. s	100	Vehicle

B. Mouthwashes:

Mouthwashes (also called mouth rinses/ mouth rinses, oral rinses or oral washes) are liquid, aqueous compositions mainly intended to prevent, relieve and cure oral conditions and maintain oral health (such as: dental caries, dental erosion, halitosis, gingivitis, periodontitis, mucositis, to reduce the oralmicrobiota, etc.). Our study is restricted to over-the-counter compositions. Saliva substitutes are not taken into account, as they are a group of special-purpose drugs, other than mouthwashes, used whenown production of saliva is inadequate. However, indications of those two groups may overlap.

Mouthwashes are a very popular additional oral hygiene element and there are plenty of individual products. There are two main types of mouthwash applications: preventive and therapeutic. A singleproduct may possess a double function: antiplaque substances prevent as well as support the treatment of periodontal diseases, among others. It is not strictly associated with the concentration ofactive substances seen in mouthwashes, but with the

duration of usage and of course with current health status. In prevention, long-term use is required, whereas in therapy, short-time use is usually sufficient. Another function is to provide relief in some conditions, in preoperative or postoperative management as well as in aesthetic dentistry (anti-stain and whitening effects).

Mouthwashes have been under study for a long time and their compositions are in a state of flux. A substance once considered to be promising may today be forgotten, while others are still the standardof prevention and therapy. The aim of our study was to investigate the compositions of mouthwashes and their functions.

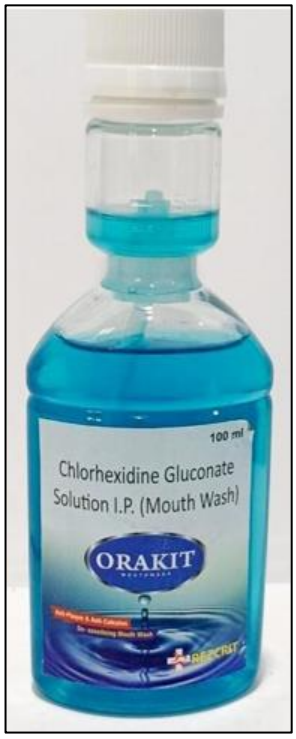

Figure 10.31: Mouthwashes

Classification of Mouthwashes:

- Antiseptic Mouthwashes - Chlorhexidine, Listerine Mouthwash.
- Analgesic Mouthwash - Benzyldiamine, Lidocaine Mouthwash.
- Anticavity Mouthwashes- Fluoride Rinse.
- Antiallergic Mouthwashes- Benadryl Mouthwash.
- Antibiotic Mouthwash- Tetracycline Mouthwash.
- Haemostatic Mouthwash- Tranexamic Acid Mouthwash.
- Steroid Mouthwashes- Triamcinolone Acetonide.
- Hospital Formulations- Miracle Mouthwash.
- Ayurvedic Mouthwashes- Triphala Mouthwash.
- Homemade Mouthwashes- Normal Saline Gargle

Advantages:

- Easy to apply.
- Economical
- Mouthwashes can reach places in the mouth that brush or floss might miss.

Disadvantages:

- It should be used only as an adjunct to mechanical plaque control.
- It does not remain in the mouth for a long time.
- Certain mouthwashes contain high levels of alcohol ranging from 18 to 26%. This may produce a burning sensation in the cheeks, teeth and gums.

C. Tooth Powder:

Definition: Tooth powder is a mildly abrasive powder that is used in combination with a toothbrushto maintain oral hygiene. The manufacture of tooth powder is a comparatively simple operation. Theprimary objective is the homogenous distribution of all the ingredients without contamination by foreign substances.

Tooth powder can be prepared by granulating the powders by drying slurries containing the extremely finely divided polishing agent, a detergent and a small amount of a binder. The dried product is then comminuted and mixed with flavoring products, the size of the granules of the toothpowders should be such that substantially all are retained on a 100 mesh but pass through a 40-meshscreen. Making of tooth powder is simple and inexpensive and requires ingredients you probably already have in your home.

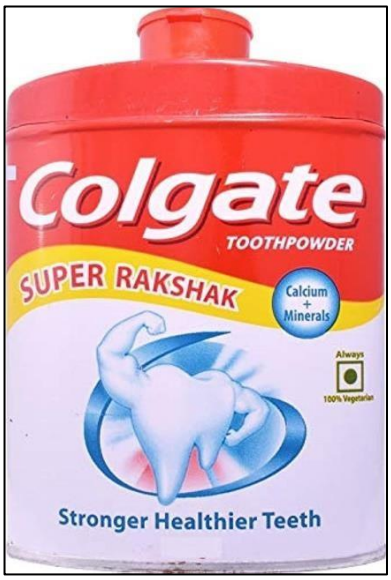

Figure 10.32: Tooth Powder

Table 10.29: Formulation

Ingredients	Quantity (gm)
Dicalcium phosphate, Dihydrate	75.0
Precipitated calcium carbonates	22.0
Sodium lauryl sulphate	1.0
Soluble saccharin	2.0
Peppermint oil	0.4 ml
Cinnamon oil	0.2 ml

Types of Tooth Powder:

a. Whitening Tooth Powder
b. Natural Tooth Powder
c. Herbal Tooth Powder
d. Homemade Tooth Powder

a. Whitening Tooth Powder: Its purpose is to freshen breath; help heal gums and reduce theamount of inflammation in the mouth. Tooth powders also can polish and whiten a person's teeth.

b. Natural Tooth Powder: Ingredients like sea salt, which acts as an abrasive, natural chalk, and certain essential oils like peppermint, eucalyptus, and wintergreen are common ingredients in natural tooth powders.

c. Herbal Tooth Powder: Sore or bleeding gums also can benefit from herbal tooth powder. Herbal tooth powder can have a variety of ingredients. Baking soda, powdered chalk and white clayare common. Herbal tooth powder has been around for centuries, and many believe it to be an essential part of any teeth-cleaning regimen.

d. Homemade Tooth Powder: These powders also can be made at home. • Homemade herbaltooth powders can be beneficial because they may cost less and the person making it will know exactly what ingredients he is putting in his mouth or the mouths of his children.

10.4.5 Lip Decorators:

A. Lipstick:

Lipstick is a cosmetic product containing pigments, oils, waxes and emollients that apply color, texture and protection to lips.

They are classified under skin colorants which are referred as beauty aids for purpose of alteration of appearance of skin and enhancing the appearance.

As most other types of makeup, lipstick is typically, but not exclusively, worn by women. some lipsticks are alsolip balms, to add color and hydration. These preparations do not damage the skin and are non-tacky.They typically involve a color change but also increases shine and smooth out appearance of wrinkles and folds on lips. they are a solid product housed in a molded packaging.

Figure 10.33: Lipstick

Ideal Characteristics:

- It has smooth surface with uniform color.
- It is free from defects which includes pinholes and grittiness.
- It should have stable shelf life.
- And should not exclude color.
- It should be dermatological safe, nontoxic and nonirritant.
- It must consist of stable color easy to apply and stay on for prolong period of time.
- Should not be excessive greasy or tacky.
- It should not melt at high temperature (45 degree) and should not harden at cold temperature (7-10 degree).

Table 10.30: Formulation

Ingredients	Quantity (%)
Solid waxes	10
Softening	15
Oil	65
Colouring agent	Q. S
Perfumes	Q. S
Preservatives	Q. S

Procedure:

The lipstick was formulated as per general method of lipstick formulation. In brief, all hard and softwaxes were melted in China dish on water bath or heating Mantle with decreasing order of their melting point. Concentrated colourings pigment was mixed and Castor oil heated. Both phases weremixed at some temperature. Rose oil. Lemon juice, eugenol, shikakai powder. vanilla essences wereadded at 40^ 0- then mixture was poured into lipstick mould in excess amount and mould was kept on ice bath After solidification surplus amount was scrapped with blade, lipsticks were removed from mould and flammed. prepared lipsticks were fitted in lipsticks container and used for further evaluation.

B. Lip balm:

Lip balm is a product which is put on lips so they will not dry when a person is outdoors in the sun and wind. Lip balm is usually made from petrolatum. Some types of lip balm also include sunscreento protect the lips from sunburn. Lip balm comes in tubes and small pots with screw-on lids. Lip balm is often used during the winter, because the cold winter winds can dry out a person's lips so that they are cracked and hurting.

Figure 10.34: Lip Balm

Procedure: All the above materials were weighed accurately on a digital balance nearest accuracy to 0.1 gm. Preparation method opted for the preparation of herbal lip balm stick was of heating solid raw ingredients at consistent temperature with indirect flame bees wax was crude and grinded into small uniform size and was melted in 50 ml beaker in indirect flame with an highest temperature of 90°C and all other ingredients like vitamin E beetroot juice rose essence almond oil were mixed vigorouslyand add to the mixture and mixture was stirred continuously till homogenous mixture was obtained and was poured into balm stick moulds just before pouring glycerine was applied over the mould with cotton and the moulds were kept in ice bath aside for about an hour in cool and dry place indirect to sunlight till it solidifies and was used after 48 hours after keeping at room temperature for stability and analytical testing.

Table 10.31: Formulation

Ingredients	Quantity (%)
Bees wax	12
Beetroot	11
Almond oil	5

Ingredients	Quantity (%)
Aloe vera	4
Vitamin E	1.5
Rose water	2
Glycerol	2-10

10.4.6 Nail Cosmetics:

Before we discuss the cosmetics for nail, let us have an idea about nails. Nails are formed at the dorsal surface as a protective cover of the tips of the finger and toes. The nail functions as a protective to the exposed tips of the fingers and toes. This helps to limit their distortion when theyare subjected to different mechanical stress. The natural color of the nail is pinkish due to the presence of underlaying blood vessels. The nail should receive regular care to maintain its beauty.The nail is another part of body which enhances the beauty. The nail should get regular care to maintain it. Apart from mending the nails in regular intervals the nail care preparations should be used for beautification of the nails.

The various preparations of nail care are nail polish or lacquers, removers, nail creams, cuticle softeners and removers, nail whiteners and bleaches. The materials used are nail polish, thinner, remover, nail creams etc. The lacquers are the most widely used nail cosmetic. The product can varyfrom transparent uncoloured to pink, metallic and many more shades of attraction. These are also known as nail enamel or nail varnish. These materials give very good look and should be glossy.

These should be non-toxic and quick drying nature and easy to apply with good adherence property and long lasting. The nail lacquers contain materials like film formers, resins, solvents diluents and plasticizers, colors, perfumes, pearlscent pigments etc.

The lacquer removers are required to removethe old lacquers to put new or to change the color. These are also called nail cleansers and it contains solvents like acetone, ethyl acetate, amyl acetate, toluene along with some fatting agents.

Nail creams are the agents which protect the nail from brittleness. The composition of nail creams is lanolin, beeswax, petroleum jelly, perfume and these agents give emollient effect and retain the moisture to give a good shiny appearance.

The cuticle is the thin fold of skin which extend over the lunula at the base of the nail and due to its irregular growth, it looks unpleasant. There is preparationknown as cuticle removers, which may be a vegetable oil or fatty acid esters. These Cosmaceuticalsagents loosen the cuticle and remove it.

The materials used are lanolin, bees wax, petroleum jelly andperfume. The composition of lotions used to remove cuticle are alcohol, diethyl phthalate, water, perfume, preservative, steryl dimethyl benzyl ammonium chloride. The agents used to whiten the nail at the edge are called nail whiteners and contain titanium oxide, petroleum jelly and bees' wax.

The preparations used to remove different stains and discoloration, ink, tobacco, vegetable stains are called nail bleaches. It contains hydrogen peroxide, ammonia, rose water, preservatives. Few examples of the formula for nail cream and lacquers are given in the appendix for an idea about them.

10.5 Herbal Cosmetics:

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The history of herbals is the history of humankind, for every culture throughout time has relied uponherbs for its medicines and cosmetics. Some cultures, for instance, India and China have maintaineda strong, unbroken tradition of herbalism for several centuries, while in Europe and North America its popularity has soared and plunged periodically as Western medicine and cosmetics achieved greater prominence.

Today, however, interest in herbal products has increased once again, with an appreciation of its safer, holistic approach. Probably the first system of herbal products, apart from the almost instinctive use of plants for healing that existed from the dawn of history and is still practiced by remote tribes, was developed in India well over 4,000 years ago. From India, the use ofplants probably traveled with migrating people into China. Traditional Chinese medicine has developed a strong philosophical viewpoint on health and disease, with treatments ranging from herbal medicines to acupuncture, moxibustion, and massage techniques. Moxibustion is a traditional Chinese medicine therapy that consists of burning dried mugwort (Artemisia argyi) on particular points of the body. It plays an important role in the traditional medical systems of China,Japan, Korea, Vietnam, and Mongolia. Ancient scriptures like Abhijnana, Shakuntalam, and Meghadootam of Kalidasa and many mythological epics encompass the reference of cosmetics like Tilak, Kajal, Alita, and

Agaru (Aquilaria agalbeha) that were used as body decorative and to create beauty spots on the chinand cheeks in the era ruled by gods and their deities. The concept of beauty and cosmetics is as old as mankind and civilization. The famous depictions in the Ajanta and Ellora caves, Khajuraho provethat not only women, but men also adorned themselves with jewels and cosmetics. Encrypted in history is the Aryan period that witnessed the use of turmeric- haridra (Curcuma longa, Linn), saffron, alkanet, agaru, chlorophyll green from nettle plants, and indigo for bodily-decorations apart from using Ramachandran (Pterocarpus santalinus Linn), Chandan (Santalum album) for beautification. Using Mehendi (henna) for dyeing hair in different colors and conditioning was also practiced in the olden times.

Nutracosmetics are an emerging class of health and beauty aid products that combine the benefits ofnutracosmetical ingredients with the elegance, skin feel, and delivery systems of cosmetics. Herbs and spices have been used in maintaining and enhancing human beauty because herbs have many beneficial properties, such as sunscreen, anti-aging, moisturizing, antioxidant, anti-cellulite, and anti-microbial effects. As compared to synthetic cosmetic products, herbal products are mild, biodegradable, and have a low toxicity profile. Numerous chemical toxins, micro-organisms, chemicals, infections present in the atmosphere cause damage to the skin. Cosmetics alone are not sufficient to take care of skin and body parts; they require the association of active ingredients to check the damage and aging of the skin. Herbal cosmetics have now emerged as the appropriate solution to the current problem. The personal care industry is currently more concentrated on herbal cosmetics, as nowadays it is a fast-growing segment with a vast scope of manifold expansion in coming years.

Herbal cosmetics represent cosmetics associated with active bio-ingredients, nutraceuticals, orpharmaceuticals. The use of bioactive phytochemicals from a variety of botanicals has dual functions:

- These serve as cosmetics for the care of the body and its parts, and
- The phytoconstituents present therein to influence the biological functions of the skin andprovide nutrients necessary for the healthy skin or hair.

In general, botanicals provide different vitamins, antioxidants, various oils, essential oils, hydrocolloids, proteins, terpenoids, and other bioactive molecules. Necessary efforts are required to associate modern cosmetology with bioactive ingredients based on the traditional system of medicineleading to the emergence of novel cosmeceuticals for skin and body care.

10.6 Ideal Properties of Cosmetics:

Cosmetics are intended to be applied/ placed in contact with external parts of the human body namely, skin, hairs, nails, lips, teeth, and mucous membranes of the oral cavity. Because these

preparations are in contact with the said parts for a considerable duration of time, the following arethe desirable characteristics of cosmetics.

- Cosmetics should be non-toxic, non-irritant, and acceptable to regulatory agencies.
- They should be readily applicable and pleasant in use.
- They should be physically and chemically inert.
- They should be Economical.
- They should have long-lasting property.
- They should have the ability to mask the imperfections of the skin.
- They should be stable and have a good appearance.
- Cosmetics should provide significant cleaning if intended.
- They should be easily removed from the skin when needed.

10.7 Classification of Herbal Cosmetic and Cosmeceutical products:

Cosmetics are classified into four main categories which are as follows:

A. Based on Widely Used Body Parts.

- Skin cosmetics
- Hair cosmetics
- Face cosmetics
- Eye make ups.
- Lip decorators
- Nail cosmetics

B. Based on The Physical Form.

- Emulsions. E.g.: cold cream; vanishing cream
- Powders. E.g.: face powder, talcum powder, tooth powder
- Sticks. E.g.: Lipsticks, deodorant sticks.
- Oils. E.g.: hair oils
- Jellies. E.g.: hair jelly
- Paste. E.g.: Tooth paste, deodorant paste
- Soap. E.g., shampoo, shaving soap
- Solution. E.g.: After shave solution
- Aerosols. E.g.: After shave spray

C. Based on Function of Cosmetic Preparation.

- Emollient Preparation
- Cleansing Preparation
- Decorative Preparation
- Deodorant/ Antiperspirants
- Protective Preparations

D. Based on solid state.

- **Solid:** e.g., Powders.
- **Liquid:** e.g., Lotion, mouthwashes.
- **Semisolid:** e.g., gel, cream.

10.7.1 Classification of Cosmetics According to Their Use:

A. Use for the skin.
B. Use for nails.
C. Use for teeth and Mouth.
D. Use for Hairs.
E. Use for eyes.

A. Use for The Skin: The skin mainly intends to protect human beings against environmental aggressions. The cosmetic products that are poured, rubbed, or applied on skin are known as skin cosmetics. Skin cosmetics area range of products that support skin integrity including nutrition, avoidance of excessive sun exposure, and appropriate use of emollients that enhance skin tone and beautification. These are alsocomponents of wound healing, neonates, the elderly, stomas, radiation treatment, and some medication.

E.g., creams, powders, deodorants, lotions, antiperspirants, moisturizers, perfumes, skin tones, etc.

B. Use for the nails: The nails, in particular the nails plates of the fingers of hands and feet, have been subjects ofdecoration in terms of shine or color.

E.g., nail lacquers, nail lacquer remover, cuticle removers, manicure, and pedicure preparations.

C. Use for The Teeth and Mouth: Dental care products are meant for keeping the dental structure healthy, strong, and protected againstany infection (oral). These are also meant for keeping the enamel on teeth intact. Cosmetic mouthwashes consisting of water, alcohol, flavor (essential oils), and color primarily function to remove or destroy the bacteria in the oral cavity.

E.g., dentifrices, mouthwashes, dental powders, lotions, gargles, mouth fresheners.

D. Use for The Eyes: Since eyes are a very sensitive and important part of our body and also require high lightening duringbeautification but with utmost care and protection.

E.g., eye creams, eyelashes, eyeliners, mascara, and eye shadow.

E. Use for The Hairs: Hair cosmetics are the range of products that are used for the hygiene of hairs involving hairs that grows from the human scalp, facial, pubic, and other body hairs. Hair care routines differ according to an individual's culture and the physical characteristics of one's hair. Hairs may be colored, trimmed, shaved, plugged, or otherwise removed with treatments such as waxing, threading, etc.

E.g., shampoo, hair removers, hair dyes, hair sprays, depilatories, hair wave preparation, depilatories,shaving preparation, etc.

10.7.2 Classification of Herbal Cosmetics According to Their Function:

A. **Curative and therapeutic:** Some cosmetic products which are used for beautification arealso meant to have curative and therapeutic properties. **e.g**., antiperspirants and hair preparations.
B. **Protective:** Some cosmetic products have protective functions which not only protect our skinfrom external environmental factors but also reduce its intensity to enable the skin to develop its protection against exposure. **e.g.,** sunscreens.

C. Corrective: The cosmetic products which are applied to correct or improve tone and mask theimperfection either from the face, hairs, heals, nails, teeth, etc. **e.g**., Crack creams.

D. Decorative: Decorative function of the cosmetics gives the person a feeling of confidence, happiness during the occasion. The cosmetic product which provides decorative function highlights different body parts like nails and hairs by different shades of colors and shine etc. **e.g.,** lipsticks, nail lacquer, eyelashes, mascara, etc.

10.7.3 Classification of Cosmetics According to Their Physical Nature:

A. Aerosols: Aerosols are the pressurized dosage forms containing one or more active ingredients.In aerosols, the product material can be removed without contamination of remaining materials, so that the product can be delivered directly to the affected area. **E.g.,** Hair perfumes, aftershave lotion, etc.

B. Cakes: Cakes are the semi-solid preparations that are formed by applying accurate pressure. Awell-formulated cake will come out easily with a sponge and should cover the skin uniformly. **E.g.,** Rouge compact, makeup compact.

C. Emulsions: An emulsion is a biphasic liquid dosage form in which two immiscible liquids aremade miscible by the addition of a third substance known as an emulgent or emulsifying agent. Thecosmetic products covered under this category include. **E.g**., Vanishing cream, cold cream, cleansing cream, all-purpose cream.

D. Oils: An oil is any neutral, nonpolar chemical substance, that is a viscous liquid at ambienttemperature and is both hydrophobic and lipophilic. Oils may be of animal, vegetable, or petrochemical origin. They may be volatile or non-volatile. **E.g**., Hair oil

E. Pastes: These are semisolid preparations meant for external application to the skin. Due to the presence of large amounts of solids, they are less attractive cosmetically than ointments. Since pastesare stiff, they do not melt at ordinary temperature, thus forming and holding a protective coating over the areas to which they are applied. **E.g**., Toothpaste, deodorant paste.

F. Powder: Powders are solid dosage forms that are meant for internal and external use. They areavailable in crystalline or amorphous form. In cosmetics, powders are used for face and body care,not only by women but also by men. The body powders are also known as dusting powders. **e.g**., tooth powder, talcum powder, face powder.

G. Solution: Solution is a homogeneous mixture composed of two or more substances. The solution assumes characteristics of solvent i.e. its phase. **e.g**., aftershave lotions, hand lotions, astringent lotions, etc.

H. Soaps: Soap is a salt of fatty acids. Soaps are used for cleaning and are obtained by treatingvegetable or animal oils and fats with a strong base such as sodium hydroxide and potassium hydroxide in an aqueous solution. **e.g**., shaving soaps, bathing soaps, toilet soaps, and shampoo soaps.

I. Sticks: e.g., lipsticks, deodorant sticks.

10.7.4 Classification of Cosmetics According to Their Solid State:

- **Solid:** e.g., Powders.
- **Liquid:** e.g., Lotion, mouthwashes.
- **Semisolid:** e.g., gel, cream.

10.8 Regulatory Aspects:

Cosmetic products are now considered no less than pharmaceutical products in terms of increasing selection and quality control. The manufacturing of these is required to follow CGMP (Current GoodManufacturing Practice). For example, schedule M-II of Drugs and Cosmetic Act, 1944 & Rules 1945. Validation of processes and equipments labeling requirements, shelf-life testing, and animal testing is now an essential part of cosmetic manufacturing. Certification from standard regulating bodies like BIS (Bureau of Indian Standards), ISO (International Organization of Standards) adds to the reputation of the cosmetic manufacturing company. There has been an increasing trend for use ofherbal cosmetics & personal care products especially in the skincare segment and it accounts for ₹ 450 crores of the domestic market. Many Indian Pharmaceutical companies like Dabur, Cadila have expanded their product range by starting the production of herbal cosmetics. The cosmetic products have to be formulated and conformed to restrictions imposed by IS 4707 (Part I & Part II), the guidelines of CTFA (Cosmetics, Toiletries & Fragrance Association), and CHIC (Cosmetic Harmonisation and International Cooperation) as revised from time to time. The Bureau of Indian