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Formulation an evaluation of cosmetics

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Abstract

To be a cosmetic chemist you have to learn to make cosmetic formulas. For most people starting out in the cosmetic industry, you'll specialize in a specific type of formulation such as skin, hair, or colour cosmetics.

However, to be a complete cosmetic chemist you should have an understanding of how ALL cosmetics work and are formulated. This doesn't mean you have to go make them (although that is encourage) but it does mean that if someone asks you how a product works, you'll be able to answer them.

In this series we are going to cover as many types of cosmetics and personal care products we can imagine. We'll discuss what a product is designed to do, how it works, and some of the ingredients that make it work. Before we get into the specific formulas, it makes sense to give an overview of all the types of products that are considered cosmetics.

While there are thousands of personal care or cosmetic products on the market.

Keywords: Cosmetic evaluation, cosmetic formulation, skin care products, dental products

Introduction

The term cosmetics have been derived from the term "COSMETIKOS" which means the skill to decorate. Thus, cosmetics is the art of decorating yourself to look beautiful. According to D & C Act: - Cosmetics mean any articles meant to be rubbed, poured, sprinkled or sprayed on or introduced into or otherwise applied to any part of the human body for cleansing, beautifying, promoting attractiveness or altering appearance and include any article intended for use as a component of cosmetic. Soap is not covered under cosmetic product.

Aim an Objectives

Formulation an evaluation of cosmetics

No Side Effects

In line with the U.S. Food and Drug Administration's objective to ensure that foods and cosmetics are safe and properly labelled, most cosmetics manufacturers ensure stringent quality procedures in the production process. One of the objectives of reputable cosmetics manufacturers is to ensure that products have no side effects. The seemingly insatiable market for cosmetic products has driven some unscrupulous businesses to resort to technology that can meet the demand, often with spurious imitations of established brands. Fake products deliberately made for a quick dollar can have adverse effects on users, so one of the objectives of responsible retailers is to screen out harmful knock-offs.

Offer Beauty Solutions

The cosmetics industry recognizes the unique needs for individual customers and churns out a variety of niche products, including make-up, perfumes, deodorants, nail polish, lipstick, hair dyes, and even contact lenses. Since not all products will work for everyone, cosmetic businesses attempt to solve people's problems with brands that offer specific therapies and cosmetic solutions. Customers seek variety, so part of the industry's objective is to offer a product range in each niche to fit various clients' needs.

Reach Target Markets

To maintain competitiveness, the cosmetics industry's brands have to saturate the market and be part of people's lives. Apart from typical marketing tactics such as quality packaging, wide product ranges, and reasonable price-points, manufacturers and retailers in the industry have to develop strategies and techniques to gain entry into new target markets and maintain their loyal base.

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Some of the strategies include support for fashion shows and for modelling agencies, who reciprocate with free promotion and spearheading the industry's products.

Innovation

By monitoring market trends to gauge consumer behaviour, the cosmetics industry delivers products that consumers need and want. Part of the industry's success is innovation -- devising better solutions that meet new customer requirements via new products and their derivatives as a catalyst for future markets. Innovation can only be achieved through meticulous research and good relations between the industry and consumers.

Ingredients of Cosmetics

- Water
- Oils, Fats, Waxes
- Humectants
- Surfactants
- Preservatives
- Perfumes and Colours
- Herbal or Plant Material
- 18. Functional Raw Materials

1. Water: It is the main ingredient of cosmetics formulation. Thus, stability and quality of final product is dependent on the purity of water used so pure water should be used in manufacturing of cosmetics. Pure water on large scale can be manufactured by any of the methods mentioned below. → Ion exchange system
→ Distillation → Reverse osmosis

2. Oil, Fats and Waxes: These are used in preparation of creams, lotions, brilliantine, hair oil, lipsticks etc. The source of oil, fat & wax can be mineral source & animal source. The source and example is given below. Source: -1) Mineral source -mineral oil -paraffin and petroleum jelly 2) Animal source -wool fat -bees wax, Spermaceti.

Name of The Oil (Veg)	Use In Cosmetics
Almond	Creams (emollients)
Arachis	Hair oil, brilliantines
Castor	Lipstick, hair oil cream, lotion
Olive	Bath oils, creams lotions
Type of Mineral Oil	Use in cosmetic product
Light Liquid Paraffin	In bath oil, hair oil, lotion, creams brilliantines
Heavy Liquid Paraffin	In bath oil, hair oil

- waxes: - The commonly used waxes in preparation of cosmetics Include bees wax, spermaceti, ceresin, ozokerite wax.

3. Humectants: This is added to prevent drying out of

Types of Humectants	Examples
Inorganic	Calcium chloride
Metalorganic	Sodium lactate, used in sun cream lotion
Organic	Polyethylene glycol, propylene glycol, glycerol, sorbitol, mannitol.

4. Surfactants: Surfactants lower one or more boundary tensions at interface in the system. one common feature of surfactant is that they all are amphipathic molecules

containing a hydrophobic part & a hydrophilic part. Used in cosmetics to impart following functions: Detergency, Wetting, Foaming, Emulsification, Solubilization Surfactants on basis of their ionic behaviour can be divided into following 4 types: -

Types of Surfactants	Example
Anionic	Fatty acid, soap, alkaloids
Cationic	Alky trimethyl ammonium salts, quaternate diamine salts
Non-ionic	Alkanolamines, alkyl polyglycol ether
Ampholytic	Betaines, acyl peptides

5. Preservatives: Used to prevent spoilage which occurs due to 1) Oxidation of oils 2) Microbial growth • Unused cosmetics are usually contaminated with PSEUDOMONAS but used cosmetics are contaminated with Staphylococci, Fungi, Yeast.

Types of preservatives

- a) Anti-microbial agents: - e.g. Benzoic acid, formaldehyde, cresol, phenol, thiomersal, phenyl mercuric salts. Etc.
- b) Antioxidants: - Gallic acid, methyl gallate, BHA, BHT, Tocopherol, citric acid, Ethanolamine, lecithin, ascorbic acid, sodium sulphite, Sodium metabisulphite
- c) Antioxidant synergists: - Enhance the efficacy of antioxidants. examples include: -ascorbic acid, citric acid, phosphoric acid
- d) UV absorbers: -These are mainly used in products which are vulnerable to visible or UV light. By incorporating UV absorbers colourless containers can be used if deterioration is due to UV light only

6. Perfumes: The word perfume has been derived from "per" means through and "fumes" means smoke. It suggests that early perfumes were pleasant smells obtained by burning wood and grass etc.

7. Colors: It defined as visual sensation caused by a definite wavelength by an object by one/more phenomenon of emission, reflection, refraction, transmission. Colours can be classified into three classes: - a) Natural colours: - Plant source: - e.g., Saffron, turmeric Animal source: -e.g. Cochineal (red) b) Inorganic colours: - e.g. Iron oxides, chromium oxides, carbon black, titanium dioxide, zinc oxide etc. c) Coal tar colours: -Tartazine, amaranth, Erythrosine, Indigo carmine. etc.

8. Herbal or Plant Material: These herbal or plant materials are used in different cosmetics preparations.

9. Functional Raw Materials: These agents contribute towards some functional property.

(4) Formulation of Cosmetics for skin

Function

- (a) To provide decoration
- (b) To supplement natural functions of skin Type of cosmetics used for skin:-
 - Skin cream
 - Lotion
 - Face powder & Compacts

- Skin colorants
- Body powder
- Face pack & Masks
- Bath Preparations (bath salt, oil, powder, foam) 8.
- Astringents & Skin tonics (antiperspirants, astringent lotion, presheaves & after shave lotion, colognes).

Lotions

- Cleansing lotion
- A typical formulation
 Mineral oil 38%,
 Bees wax 2%,
 Triethanolamine stearate 8%,
 Water to make 100%
 Preservative & Perfumes – q.s

Note: - Triethanolamine discolours on standing so it should be made in situ using calculated amount of stearic acid and Triethanolamine. O/W lotion have tendency to increase in viscosity with ageing (this is prevented by using ethoxylated cholesterol)

(II) Sunscreen lotions: These lotions have property of protecting the skin from sun burning.

An ideal sunscreen agent should have following properties.

- Absorb light over the range of 200-400 nm.
- Be stable to heat, light & perspiration
- Be nontoxic & non-irritant
- Not be rapidly absorbed
- Be neutral
- Be readily soluble in suitable vehicles.

US dept of health has recommended following ingredients to be used as sunscreen agents. They absorb U.V radiation.

- Cycloform
- Monoglyceryl Para Amino Benzoate
- Digalloyl Trioleate
- Benzyl Salicylate
- Benzyl Cinnamate

And few others are PABA, cinnamic acid derivatives, coumarin derivatives, Quinine salts, uric acid derivatives.

A typical formulation
 Glyceryl p-amino benzoate 3.0 %
 Glycerine 5.0 %
 Alcohol 10 %
 Methyl cellulose 0.5 %
 Perfume q.s
 Water to make 100 %

Methods of Preparation

(1) Calamine of the present invention and zinc oxide all adopt micropower, namely diameter all ≤ 10 nm, its powder body dissolubility increases substantially, and there is stronger absorptivity and strong penetrance, can be good at through skin histology, effectively improving bioavailability, Be very effective.

(2) Suspension stabilizer is adopted to be Colloidal microcrystalline cellulose, deflocculant, glycerol, lubricant mixture in the present invention program, effectively can improve suspension stability, effectively can preserve suspended state, and good dispersion again, improve quality and the effect thereof of product.

(3) The present invention encourages Calamine and zinc oxide is mixed by dry grinding, and its flow process is comparatively simple, saves the follow-up work that a lot of wet method needs, power consumption simultaneously and production cost all lower.

(4) Calamine Lotion prepared of the present invention program, good hand touch, is coated with the used time without sand type.

Specific embodiment

Further illustrate the present invention program below by way of several specific embodiment, should be appreciated that any one following embodiment not any type of limitation of the invention further.

Embodiment 1

Calamine 150kg, zinc oxide 500kg are prepared into micro powder through jet mill, diameter is 3 μ m, the two is mixed through dry grinding, and adopt isopropyl alcohol 10L and glycerol 30L mixing repeatedly to clean multiphases, then Colloidal microcrystalline cellulose, potassium citrate and sodium tartrate mixture (mass ratio is 1:1), glycerol, magnesium stearate=1:0.2:0.9:0.01 mix suspending stabilizing agent is added, be mixed with the suspension that concentration is 30%-50%, last fill obtains finished product.

Embodiment 2

Calamine 150kg, zinc oxide 500kg are prepared into micro powder through jet mill, diameter is 5 μ m, the two is mixed through dry grinding, and adopt isopropyl alcohol 10L and glycerol 50L mixing repeatedly to clean multipass, then Colloidal microcrystalline cellulose, potassium dihydrogen phosphate, glycerol, magnesium stearate=1:0.3:1.0:0.03 mix suspending stabilizing agent is added, be mixed with the suspension that concentration is 30%-50%, last fill obtains finished product.



Fig 1: Skin care products

Dental Products

Introduction Dentifrice a preparation for cleansing and polishing the teeth; it may contain a therapeutic agent, such as fluoride, to inhibit dental caries. A substance, such as a paste or powder, for cleaning the teeth. Etymology: L, dens + fiacre, to rub a pharmaceutical compound used with a toothbrush for cleaning and polishing the teeth. It typically contains a mild abrasive, detergent, flavouring agent, fluoride, and binder. Other common ingredients are deodorants, humectants, desensitizers, and various

medications to prevent dental caries. Also called toothpaste. Dentifrice (toothpaste) A pharmaceutical compound used in conjunction with the toothbrush to clean and polish the teeth. Contains a mild abrasive, a detergent, a flavouring agent, a binder, and occasionally deodorants and various medicaments designed as caries preventives (e.g., antiseptics). Two type of Dentifrice 1. Simple cleansing dentifrices 2. Therapeutics dentifrices: Therapeutic dentifrices may contain the bactericidal, bacteriostatic, enzyme inhibiting or acid neutralizing qualities of the drugs or chemicals.

The teeth and common problem

1. **Bad Breath** If you suffer from bad breath, you are not alone. Bad breath, also called halitosis, can be downright embarrassing. According to dental studies, about 85% of people with persistent bad breath have a dental condition that is to blame. Gum disease, cavities, oral cancer, dry mouth and bacteria on the tongue are some of the dental problems that can cause bad breath. Using mouthwash to cover up bad breath when a dental problem is present will only mask the odour and not cure it. If you suffer from chronic bad breath, visit your dentist to rule out any of these problems
2. **Tooth Decay** Did you know tooth decay, also known as cavities, is the second most prevalent disease in the United States (the common cold is first). Tooth decay occurs when plaque, the sticky substance that forms on teeth, combines with the sugars and / or starches of the food we eat. This combination produces acids that attack tooth enamel. The best way to prevent tooth decay is by brushing twice a day, flossing daily and going to your regular dental check-ups. Eating healthy foods and avoiding snacks and drinks that are high in sugar are also ways to prevent decay.
3. **Gum (Periodontal) Disease** Studies have shown that periodontal disease, also known as gum disease, is linked to heart attacks and strokes. Gum disease is an infection in the gums surrounding the teeth. Gum disease is also one of the main causes of tooth loss among adults. There are two major stages of gum disease: gingivitis and periodontitis. Regular dental check-ups along with brushing at least twice a day and flossing daily play an important role in preventing gum disease.
4. **Oral Cancer** Oral cancer is a serious and deadly disease that affects millions of people. In fact, the Oral Cancer Foundation estimates that someone in the United States dies every hour of every day from oral cancer. Over 300,000 new cases of oral cancer are diagnosed every year, worldwide. This serious dental disease, which pertains to the mouth, lips or throat, is often highly curable if diagnosed and treated in the early stages.
5. **Mouth Sores** There are several different types of mouth sores and they can be pesky and bothersome. Unless a mouth sore lasts more than two weeks, it is usually nothing to worry about and will disappear on its own. Common mouth sores are canker sores, fever blisters, cold sores, ulcers and thrush.
6. **Tooth Erosion** Tooth erosion is the loss of tooth structure and is caused by acid attacking the enamel. Tooth erosion signs and symptoms can range from

sensitivity to more severe problems such as cracking. Tooth erosion is more common than people might think, but it can also be easily prevented.

7. **Tooth Sensitivity** Tooth sensitivity is a common problem that affects millions of people. Basically, tooth sensitivity means experiencing pain or discomfort to your teeth from sweets, cold air, hot drinks, cold drinks or ice cream. Some people with sensitive teeth even experience discomfort from brushing and flossing. The good news is that sensitive teeth can be treated.
8. **Toothaches and Dental Emergencies** I can't think of much worse than suffering from a toothache. While many toothaches and dental emergencies can be easily avoided just by regular visits to the dentist, we all know that accidents can and do happen. Having a dental emergency can be very painful and scary. Fortunately, you can do several things until you are able to see your dentist.
8. **Unattractive Smile** While an unattractive smile is not technically a "dental problem," it is considered a dental problem by people who are unhappy with their smile and it's also a major reason that many patients seek dental treatment. An unattractive smile can really lower a person's self-esteem. Luckily, with today's technologies and developments, anyone can have a beautiful smile. Whether it's teeth whitening, dental implants, orthodontics or other cosmetic dental work, chances are that your dentist can give you the smile of your dreams.



Fig 2: dental products

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 - 7) Topical anaesthetics
 - 8) Tartar reducing product
 - 9) Mechanical method for plaque control
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 - 12) Newer approaches

Introduction

Dentifrice a preparation for cleansing and polishing the teeth; it may contain a therapeutic agent, such as fluoride, to inhibit dental caries. A substance, such as a paste or powder, for cleaning the teeth. Etymology: L, dens + fiacre, to rub a pharmaceutical compound used with a toothbrush for cleaning and polishing the teeth. It typically contains a mild abrasive, detergent, flavouring agent, fluoride, and binder. Other common ingredients are deodorants, humectants, desensitizers, and various medications to prevent dental caries. Also called toothpaste. Dentifrice (toothpaste) A pharmaceutical compound used in conjunction with the toothbrush to clean and polish the teeth. Contains a mild abrasive, a detergent, a flavouring agent, a binder, and occasionally deodorants and various medicaments designed as caries preventives (e.g., antiseptics).

Two type of Dentifrice

1. Simple cleansing dentifrices
2. Therapeutics dentifrices:

Therapeutic dentifrices may contain the bactericidal, bacteriostatic, enzyme inhibiting or acid neutralizing qualities of the drugs or chemicals. The teeth and common problem

Classification of Dental Products Classification depending on Dental Problems.

- I. Products for carries control.
 - a. Systemic fluoride
 - b. Topical fluoride
 - i. Dentifrices
 - ii. Gel
 - iii. Rinses
 - iv. Miscellaneous
- II. Products for plaque control.
 - a. Chemical agents
 - i. Dentifrices
 - ii. Mouth washes
 - b. Mechanical products
 - i. Tooth brushes
 - ii. Dental floss
 - iii. Other aids to plaque removal.
- III. Products for tooth surface hypersensitivity
- IV. Topical aesthetic.
- V. Halitosis

Toothpaste Ingredients and Manufacture

Requirements of a toothpaste/dentifrice the major requirements of oral preparations, especially toothpastes, have been summarized on many occasions in the past.

For a toothpaste, these requirements were:

1. When used properly, with an efficient toothbrush, it should clean the teeth adequately, that is, remove food debris, plaque and stains.
2. It should leave the mouth with a fresh, clean sensation.
3. Its cost should be such as to encourage regular and frequent use by all.
4. It should be harmless, pleasant and convenient to use. (It should conform to the EC Cosmetics Directive in that it is 'not liable to cause damage to human health when applied under normal usage conditions'.)
5. It should be capable of being packed economically and should be stable in storage during its commercial shelf-life.
6. It should conform to accepted standards in terms of its abrasiveness to enamel and dentine.

7. Claims should be substantiated by properly conducted clinical trials. These requirements remain valid today, with perhaps only the priority and emphasis placed on any individual point being changed. To achieve this, it is necessary to have a high solid suspension in a stable viscous form and therefore gelling agents or thickening polymers have to be incorporated. To prevent it from drying out it also becomes necessary to add humectants to the system. Finally, colours (if desired), and preservatives (if necessary), are also added, creating a complex matrix of ingredients which can be classified as a 'simple' cosmetic toothpaste, i.e.

1. Cleaning and polishing agents (abrasives).
2. Surfactant (cleaning and foaming).
3. Humectants.
4. Binding (gelling) agents.
5. Sweetener.
6. Flavouring agents.
7. Minor ingredients (colours, whitening agents, preservatives). In such a complex system many interactions can take place depending upon internal and external factors. Even the 'simple' formulations require extensive stability testing, over a range of temperatures and time, in order to be confident that the product quality does not change upon storage. Only in this way can the manufacturer have a high degree of confidence that the product seen by the consumer is of premium quality. 'A dentifrice should be no more abrasive than is necessary to keep the teeth clean - that is free of accessible plaque, debris and superficial stain'. Thus, considerable performance testing on the final formulation is necessary.

Ingredients used in toothpastes all ingredients generally have specifications approved for use in foodstuffs or are special grades available for dental preparations, especially abrasives.

1. Cleaning and polishing agents (abrasives) Clearly the main purpose of the cleaning and polishing agent is to remove any adherent layer on the teeth, and the materials normally considered are given below.

(a) Dental grade silicas (SiO₂) n. In a relatively short period of time silica has generally become the abrasive of choice because it offers great flexibility to the formulator. It can be produced to a high state of purity giving excellent compatibility with therapeutic additives and flavours. Varying the particle size can alter the finished product abrasively. Clear gels can be formulated by carefully matching the refractive indices of silica used with the liquid phase of the toothpaste. Silica can also give additional thickening properties to the dental cream if extremely fine particle sizes are used (silica thickeners). When used in toothpastes, silica is generally incorporated at levels between 10 and 30%.

(b) Dicalcium phosphate dihydrate (DCPD) CaHPO₄·2H₂O. DCPD is one of the most commonly used dental cream abrasives, perhaps because it gives good flavour stability. It is normally white in colour and gives toothpaste which generally does not require additional whitening agents. The main drawback is that it is only fully compatible with sodium monofluorophosphate as the fluoride source because of the presence of free calcium ions. Formulating with other therapeutic fluoride sources does not appear to have been successful. The abrasive is usually formulated at

levels between 40% and 50% to give relatively dense toothpaste.

(c) Calcium carbonate CaCO_3 . Calcium carbonate is probably one of the most commonly used dental cream abrasives. Precipitated calcium carbonate (chalk) is available with a white or off-white colour and both particle size and crystalline form can be varied, depending upon its conditions of manufacture. As a result of its structure and calcium content, precipitated calcium carbonate is incompatible with sodium fluoride, but is stable with the less reactive sodium monofluorophosphate. Calcium carbonate is also used at levels between 30% and 50% to give a relatively dense paste. (d) Sodium bicarbonate (or baking soda NaHCO_3). Sodium bicarbonate has a unique 'salty' mouth-feel that tends to polarize consumers, many finding it attractive possibly due to its heritage as a cleaner/deodorizer. It is a very mild abrasive, usually used at a 5-30% level, in combination with other abrasives such as silica or calcium carbonate to achieve the required cleaning action.

(e) Hydrated alumina $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ or $\text{Al}(\text{OH})_3$. Hydrated alumina is relatively inert, cost-effective, and available as a white amorphous solid. It has good compatibility with sodium monofluorophosphate and other ingredients added to give a therapeutic benefit. The abrasive is usually formulated at levels between 40% and 50% to give a relatively dense paste.

2. Surfactants Surfactants are used in the toothpaste to aid in the penetration of the surface film on the tooth by lowering the surface tension. They also provide the secondary benefits of providing foam to suspend and remove the debris, and the subjective perception of toothpaste performance. They often have better foaming properties, and are more compatible with other ingredients since their pH range is essentially neutral. They are also available with a higher degree of purity that can eliminate some of the bitter flavour components that affect taste. In general, surfactants are used at a concentration of around 1-2% by weight in the dental cream.

(a) Sodium lauryl sulphate (SLS) This has been the main surfactant of choice, used in nearly all toothpaste brands. However, while alternative surfactants have been considered, and will continue to be looked at and developed, none is in widespread use since all have some disadvantages compared to SLS.

3. Humectants Humectants are used to prevent the paste from drying out and hardening to an unacceptable level. At the same time, they give shine and some plasticity to the paste. Generally, only two major humectants are considered for use in toothpaste, often in combination with small amounts of additional minor humectants.

(a) Glycerine, $\text{CH}_2\text{OHCHOHCH}_2\text{OH}$. Glycerine is still the humectant used in greatest bulk quantity in toothpaste. It is one of the best humectants, producing a shiny, glossy product. It is stable, non-toxic, available from both synthetic and natural sources, and provides a useful sweetening function to the paste.

(b) Sorbitol, $\text{CH}_2\text{OH}(\text{CHOH})_4\text{CH}_2\text{OH}$. Sorbitol syrup (approximately 70%) is also extensively used throughout the industry and is sometimes considered superior to glycerine depending upon the formulation. It also imparts sweetness, and is a stable humectant

(c) Propylene Glycol, $\text{CH}_3\text{CHOHCH}_2\text{OH}$ and Polyethylene Glycol, $\text{CH}_2\text{OH}(\text{CHOH})_n\text{CH}_2\text{OH}$. Propylene glycol and polyethylene glycol are not normally used as the sole humectant in a paste since they are more expensive and, in the case of propylene glycol, can impart a slightly bitter taste. PHARMAQUEST They are more generally used in relatively small amounts in combination with either glycerine or sorbitol. The amount of humectant in any formula obviously has to be adjusted depending upon the other constituents of the formula (especially abrasive nature), but generally the total humectant loading is in the range 10-30% by weight.

(d) Xylitol ($\text{CH}_2\text{OH}(\text{CHOH})_3\text{CH}_2\text{OH}$). Xylitol is a polyol equivalent of sorbitol, but with a five-carbon chain instead of six. Like sorbitol it is a naturally occurring material with a relative sweetness equal to sugar. Currently its high cost and limited availability restrict its use.

4. Gelling agents Gelling or binding agents are hydrophilic (water-loving) colloids which disperse and swell in the water phase of the toothpaste and are necessary to maintain the integral stability of the paste and prevent separation into component phases. They are probably the most widely variable components of toothpaste and the choice of gelling agent can greatly influence the dispersibility of the paste in the mouth, the generation of foam and, above all, the release of the flavour components. Some formulations have combinations of gelling agents in order to achieve the desired consumer preferences

(a) Sodium Carboxymethyl Cellulose CMC. Carboxymethyl cellulose is one of the preferred gelling agents for use in toothpaste. It can be manufactured to a high state of purity, and tailor-made for an individual requirement by varying the degree of substitution on the cellulose chain. This can give flexibility in terms of solubility, elasticity and some increased stability in the presence of electrolytes. (b) Carrageenan. It is a purified colloid, consisting of a mixture of sulphated polysaccharides and, as with all-natural products, it can be of variable quality, which could cause a problem for any formulator. Therefore, it is standardized either by repeated blending, or dilution with variable amounts of inert material. Some flexibility in the gelling properties of carrageenan can be achieved by controlling the cations present by ion exchange. (c) Miscellaneous gelling agents Xanthan - This is a polysaccharide produced by fermentation technology. It offers excellent properties for use in toothpaste since it gives a highly structured gel, relatively easily broken down when sheared, but which recovers rapidly. It is relatively insensitive to electrolytes and heat, but unfortunately it is generally incompatible with cellulosic materials because of contaminating enzymes that degrade cellulose. Hydroxy ethyl cellulose HEC - This is occasionally used as an alternative to carboxymethyl cellulose (CMC), especially when a greater electrolyte tolerance is required. Synthetic polymers - Cross linked acrylic acid polymerase become more intensively used in the past decade because of their useful thickening and suspending properties combined with their inertness and their stability to heat and ageing. Clays - Colloidal clays, either natural processed bentonites or synthetic clays, have been used as binding agents because of their

thixotropic properties. Depending upon the rest of the formula components (e.g., abrasive, amount of free water), the level of gelling agent added to a paste can vary from 0.5% to 2.0% by weight.

5. Sweetening agents These are important for product acceptance, since the final product must be neither too sweet nor too bitter. These ingredients must always be considered in partnership with the flavour because of their combined impact.

(a) Sodium saccharin. This is the sweetening agent in widest commercial use, and is generally used at a level between 0.05% and 0.5% by weight.

6. Flavours Flavours are probably the most crucial part of toothpaste because of consumer preferences. The flavour is a blend of many suitable oils, with peppermint and spearmint being the major base components. These are nearly always fortified with other components such as thymol, anethole, menthol (to give a pleasant cooling effect), eugenol (clove oil), cinnamon, eucalyptol, aniseed, and wintergreen (to give a medicinal effect). In addition, because the flavour is a mixture of sparingly soluble organic oils, its interactions with the other dentifrice components are often unpredictable and unexpected. Taste and stability can be influenced greatly by both the other components of the dental cream, e.g. free water content, or absorption by the abrasive (perhaps to the surface), and also by the physical properties of the dental cream, e.g. pH, viscosity etc.,. Depending upon the formulation, e.g. the abrasive nature and level, the gelling agent used and the presence of therapeutic ingredients which may impact taste perception, the flavour level may vary from around 0.5% to 1.5% by weight.

7. Minor ingredients

(a) Titanium Dioxide TiO₂- Titanium dioxide may be added to give additional whiteness and brilliance to the paste.

(b) Colours. Colours can be an integral part of the aspect of any toothpaste that may influence consumer preference and purchase intent. The EEC Cosmetics Directive (Annex IV) lists the permitted colours and only a small amount is necessary to create a large impact,

Products for Plaque Control

- Toothbrush
- Toothpaste
- Dental Floss
- Tongue Scraper

1. Toothbrush The toothbrush is the primary dental hygiene product you need to take care of your teeth. First, the regular toothbrush alone provides a plethora of options. Toothbrushes come in various sizes and styles. Various brushes differ from the handle to the bristles. That's why buying a toothbrush can be a confusing task. In choosing a brush, most dentists recommend soft-bristled brushes more because these can best remove plaque and traces of food that gets stuck in the teeth. You should also choose a brush that does not have a big head. Small-headed brushes can reach the back areas of the mouth for thorough and complete mouth cleaning. You can also choose from squared heads or tapered ones. As for the handle, you

should go for brushes that provide good grip. The shape of the handles themselves differs a lot. But the most important part of the brush is the bristles. There are many forms of bristles, such as rippled, flat, trimmed, or domed ones. All these different types of bristles provide specific benefits that may help meet your needs. Aside from regular brushes, however, you can also use power brushes, which is very popular among younger users. These powered brushes help clean the teeth better than children usually can.

2. Toothpaste Another important choice you have to make is what toothpaste to use to go with that perfect brush. The toothpaste aisle in the supermarket is highly congested, and the different brands and kinds often differ in ways that are vague to consumers. That's why it is even harder to choose toothpaste than a toothbrush. The trick, however, is to follow the fluoride arrow. Look for toothpaste that contains fluoride, and the brand usually doesn't matter much. Fluoride is an essential ingredient that can provide strengthening for your teeth. Fluoride works by keeping cavities away and also by polishing tooth enamel. Another clue to look for is the seal of approval by the American Dental Association, which will help lead you to safe and effective products that have passed clinical scrutiny. You can also consider your specific tastes, such as desensitizing toothpaste for sensitive teeth, whitening toothpaste for yellowing teeth, and tar-tar control toothpaste for those dealing with tar-tar problems.

3. Dental Floss Another important dental hygiene product is dental floss, which is often neglected by a lot of people. Flossing should be done at least once daily, and benefits are far ranging. Flossing can help clean teeth and in between teeth to make sure no food debris are left. It can help you easily get rid of the food stuck irritatingly between your teeth, which can lead to tooth decay, gum disease, and accumulation of bacteria in the long run. Also, bacteria can lead to bad breath, so dental floss can help keep bad breath away.

4. Tongue Scraper Another less popular product is the tongue scraper or tongue cleaner, which cleans the surface of the tongue to remove bacteria, food debris, fungi, and dead cells. The tongue is vulnerable to bacteria and fungi that can cause bad breath, oral problems and even medical conditions. Tongue cleaners come in a general form, but one thing to note is that it should be used before brushing your teeth, since brushing might cause the stuff on your tongue to recede into the throat.

Evaluation of Solid Dental Products

Identification of ingredients and estimation of their contents are essential components of overall quality control and evaluation of dental care products. The products, tooth pastes and tooth powders, can be basically classified into foam forming and non-foam forming. Some other special evaluation tests are as follows:

Abrasiveness Various tests have been designed and reported over the year, mostly on the set of extracted teeth. The teeth were mechanically brushed with pastes or powders and then the effects were studied by observation, mechanical or other means. Abrasive character normally depended on the particle size. So, study of particle size can also give such idea. Particle size This can be determined by microscopic study of the particles or by sieving or other means. Cleansing property This is studied by measuring the change in the reflectance character of a lacquer coating on the

polyester film caused by brushing with a tooth cleanser (paste or powder). Also an in vivo test has been suggested in which teeth were brushed for two weeks and condition of teeth was assessed before and after use with the help of photo graphs. Consistency It is important that the product, paste, should maintain the consistency to enable the product press out from the container. Study of viscosity is essential for this. Rheology of powders is also important for proper flow of the powder from the container. pH of the product pH of the dispersion of 10 % of the product in water is determined by PH meter. Foaming character This test is specially required for foam forming tooth pastes or tooth powders. Specific amount of product can be mixed with specific amount of water and to be shaken. The foam thus formed is studied for its nature, stability, washability. Limit test for arsenic and lead This is very important as these are highly toxic metals. Specific tests are there to estimate these two metals; products may not have excess of such metals. Volatile matters and moisture A specific amount of the product required to be taken in a dish and drying is to be done till constant weight. Loss of weight will indicate percentage of moisture and volatile matters.

Literature Review of Cosmetics

Now days a new hot topic in the cosmetic industry is 'Cosmeceuticals', which is the fastest growing segment of the natural personal care industry. Cosmeceuticals are the future generation of skin care. They are the advances made within the world of dermatological products and the new backbone in skincare. All cosmeceuticals claim to contain functional ingredients with either therapeutic, disease-fighting or healing properties. The term Cosmeceutical was coined by Raymond Reed but the concept was further popularized by Dr. Albert Kingman in the late 1970's. Cosmeceuticals are topically applied as cosmetic pharmaceutical hybrids, intended to enhance the beauty through ingredients that provide additional health-related function or benefit. That means they are applied topically as cosmetics, but contain ingredients that influence the skin's biological function. Today's Cosmeceuticals are serving as a bridge between personal care products and pharmaceuticals; also, Cosmeceuticals are the fastest growing segment in skin care market. There is no regulatory category for Cosmeceuticals; hence this review tries to understand regulatory scenario as well the difference between drug and cosmetics is enlightened. The paper is an earnest endeavour to evaluate a Cosmeceutical product that claims a beneficial physiologic effect. This review paper is to give recent knowledge about the latest trend of cosmetic industry Cosmeceuticals.

Cosmetic product plays an important role in human life namely it is regularly used by an increasing no of people a demand for them for their production grows year on year colipa / cosmetic Europe the personal care association (2014) claims that every day 4million individual use cosmetics.

The market state of European in 2014 amounted to 72,531trillion euros, a European cosmetics exports accounts for 1/3 of global exports with EUR 16,343trillion (activity report 2014) taking into account that cosmetics products are used on daily basis.

According to Alice (2008) the driving trend for eco conscious beauty is actually derived from customer passion.

Kumar, massie and dumonceaux (2006) states that cosmetics industry is a very innovative lucrative and fast traced industry where product innovation is the key to success. Due to increasing environmental consciousness, the organic cosmetics are face in experimental growth (Rajagopal, 2007). In Asia, in response to consumer rising demand for cosmetic products with natural origin an anti-aging functions, herbal medicinal cosmetics has been developed by some multinational firms (hwang, 2004)

Conclusion

The usage of cosmeceuticals has drastically hiked in recent years, which in turn has increased the spectrum of the physician to broaden their range of products to enhance the comeliness of the patients associated with dermal problems. However, at times, where generations are keenly worried for their beauty, lots of manufacturing companies are competing and working hard to provide convincing results to meet requirements of the patients. Claims of effectiveness lack convincing evidence, thus the industry is challenged to provide evidence on the effectiveness of these compounds. Cosmeceuticals like vitamins, sunscreens, hydroxyl acids & many more have proved their efficacy in treating skin diseases thus enhancing the skin texture. Clinical trials of cosmeceuticals are important to know the interaction between skin and cosmeceuticals which could even be influenced by environmental fact.

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