

COSMETICS IN DERMATOLOGY

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Accurate indications, adverse reactions, and dosage schedules for drugs are provided in this book, but it is possible that they may change. The reader is urged to review the package information data of the manufacturers of the medications mentioned.

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Foreword

In our society, the importance of one's physical appearance is great and is surely growing. Yet, surprisingly, only in the surgical aspects of this field have physicians played an important role. The nonsurgical aspects have been left to the marketplace where, as might be expected, puffery and pseudoscientific babble now reign supreme. Factual information for physicians and cosmetologists seriously interested in the esthetic, rather than chemical, aspects of cosmetics has been almost nonexistent. Fortunately, this is no longer true, for with this new text there is now a practical and reliable source of information on the subject.

Several particular aspects of this book deserve special emphasis. First, it was written by a physician with a strong background in scientific method. This results in a better balanced discussion and reasoned judgment than has heretofore been found in magazine articles and other books on the subject. Second, it was written by one who has no commercial ties whatsoever to the cosmetic industry, thus it is refreshingly free of self-serving bias. Third, it was written by a woman who, because of her gender, brings to the text a needed dimension of personal understanding and experience lacking in most previous similar publications.

For all of the above reasons, this book is an authoritative and readable reference that has, in the field of medical cosmetology, no strong competitors.

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***To my husband, Michael Draelos, M.D.,
who has been the guiding light in my medical career
and source of my inspiration***

Preface

The cosmetic and personal care industry is a large economic force in the world today. One needs only to stroll through a department store, mass merchandiser, drug store, or grocery store to realize the amount of retail space that is devoted to these items. Additionally, cosmetic issues form a large portion of the popular press. A glance at popular magazine covers and newspaper lifestyle sections will always reveal at least one article dealing with cosmetic issues. Furthermore, prime-time television will feature at least one advertisement during any evening for some cosmetic or related product.

Unfortunately, the consumer has very little background information to use in the selection and evaluation of cosmetic and personal care items. Many times purchase decisions are made based on marketing claims, product packaging, or the advice of a friend. Consumers who approach cosmetic counter attendants or hair salon operators are given information that may or may not be objective or well founded. The consumer may then turn to his or her physician for medically correct, unbiased information. The purpose of *Cosmetics in Dermatology* is to provide the physician with the information needed to answer patient questions intelligently and to provide advice on the selection and use of cosmetics and personal care items.

The book is organized by type of cosmetic or personal care item. A general discussion on the use, composition, and range of products in a given category is initially provided followed by specific suggestions for appropriate product use and selection for a given patient. Both medical and cosmetology terms are used, thus a glossary is provided to bridge language differences between the two areas. The object is to help the physician understand patient questions, provide timely advice, and recognize problems that may be related to cosmetic use. Every attempt has been made to ensure that the information is up-to-date and correct; however, no responsibility can be accepted for inaccuracies, because cosmetic companies frequently reformulate or change their product lines. Companies may re-name products without changing the formulation or reformulate products without changing the name. Proprietary names of cosmetic companies and their products are used to aid the physician in providing concrete recommendations to his or her patients who fall in a given category. Product lines

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have also been divided into cosmetic counter lines, available at department stores or boutiques, and noncosmetic counter lines, available at drug stores, grocery stores, or mass merchandisers. Only nationally distributed cosmetic lines are discussed. Cosmetics that are sold through independent salespersons, beauty salons, or magazines are not included, as these lines change frequently and vary widely in their distribution. These recommendations are not intended to be an endorsement of any particular company or product line, but rather to provide a starting place for the physician in advising patients. I have personally worn or used most of the cosmetics and personal care items discussed in the text; however, I have not personally tested any of the hair-coloring agents. Thus, a detailed discussion of specific products is provided based on my experience and the experiences of my patients. Information should be verified, however, by examining and testing the specific product.

The use of cosmetics is essentially the art of illusion. A cosmetic may be defined as any substance externally applied to the body to enhance beauty. Art critics who assess the beauty of classic paintings, frequently comment on the artist's deliberate distortion of dimensions and colors to create an image of beauty that is acceptable to the human eye. Cosmetics are used in a similar fashion by individuals to correct perceived flaws and to create an illusion of beauty that conforms to the current norms of society.

But who defines beauty? Obviously, beauty is a concept that individuals define based on their background, experiences, taste, and societal norms. This book contains recommendations based on my own concept of beauty, a concept that has been heavily influenced by experiences in my practice of dermatology, the concerns that patients have expressed, my exposure to the field of cosmetology, and my perceptions as a woman. There are no absolute answers in the field of cosmetics, only personal opinions. The information presented in the pages that follow should be viewed with this understanding at all times.

It is hoped that *Cosmetics in Dermatology* will enable the physician to gain an understanding of the types of cosmetic products available, the major ingredients in the cosmetic, the intended use of the product, possible side effects from its use, and recommendations for the patient who desires cosmetic and personal care product information.

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Facial Foundations

Facial foundations are designed to add color, cover blemishes, and blend uneven facial color. They represent the class of cosmetics about which patients will most frequently question their physicians. Since a foundation is usually applied to the entire face, it has a dramatic effect on the complexion. Foundations are also intended to cover blemishes and are often used extensively by patients with acne or other medical conditions that affect facial skin. The variety in formulation, type, and color of facial foundations is wide and may be bewildering to physicians and patients alike. This chapter presents basic information on facial foundations and then focuses on those foundations appropriate for patients with oily, normal, combination, and dry skin, with a final discussion on foundations for patients with facial scarring.

There are four basic facial foundation formulations: oil-based (water-in-oil emulsions), water-based (oil-in-water emulsions), oil-free, and water-free anhydrous forms.

Oil-based foundations have pigments suspended in an oil such as mineral oil or lanolin alcohol. Vegetable oils (coconut, sesame, safflower) and synthetic esters (isopropyl myristate, octyl palmitate, isopropyl palmitate) may also be incorporated. The water evaporates from the foundation following application, leaving the pigment in oil on the face. This leaves the face with a moist feeling, which is especially desirable in patients with dry skin. Oil-based foundations undergo no change in color with wearing or color drift, as the pigment is already fully developed in oil; consequently, the effect of facial sebum is minimal. These foundations are easy to apply, since the playtime (the time from application to setting) is prolonged, allowing manipulation of the pigment over the face for up to 5 minutes.

Water-based facial foundations have a small amount of oil in which the pigment is emulsified with a relatively large amount of water. The primary emulsifier is usually a soap such as triethanolamine or a type of nonionic surfactant. The secondary emulsifier is glyceryl stearate or propylene glycol stearate. These foundations are most popular and are appropriate for minimally dry to normal skin. Since the pigment is already developed in oil, this foundation type is not subject to color change or

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drift. The playtime is shorter than with oil-based foundations due to the lower oil content.

Oil-free facial foundations, newcomers to the facial foundation market, contain no animal, vegetable, or mineral oils. These foundations are formulated for oily skin or patients with acne, since they emphasize the absence of comedogenic or blackhead-producing substances. The pigment is dissolved in water and other solvents. The skin is left with a dry feeling due to the absence of oil, but the color is more prone to change or drift with wearing as the pigment mixes with sebum. The water and solvents evaporate quickly, making the playtime extremely short. Oil-free foundations thus need to be blended into one facial area at a time to prevent streaking. Some oil-free foundations contain silicone derivatives to aid in spreading and provide a more luxuriant feel.

Anhydrous or water-free foundations are waterproof because they contain no water. Vegetable oil, mineral oil, lanolin alcohol, and synthetic esters form the oil phase, which may be mixed with waxes to form a cream. These foundations have a long playtime, no color drift, extended wear, and may be opaque, making them valuable for patients with facial scarring.

The coloring agents in all facial foundations are based on titanium dioxide with iron oxides and occasionally ultramarine blue. Titanium dioxide acts as the facial concealing or covering agent and also as a physical sunscreen. The ability of a foundation to conceal or cover the underlying skin is known as "coverage." The coverage of a foundation is generally directly related to the amount of titanium dioxide it contains. Sheer coverage foundations with minimal titanium dioxide are almost transparent and have a sun protection factor (SPF) around 2, moderate coverage foundations are translucent and have an approximate SPF of 4 to 5, and anhydrous high-coverage foundations with large amounts of titanium dioxide are opaque and act as a total physical sunblock. Some foundations, known as sportwear or antiaging foundations, may have additional chemical sunscreens agents such as PABA esters or cinnamate derivatives. A complete discussion of sun protection and sunscreens is found on page 164.

Facial foundations also contain talc and kaolin, which function as fillers and blotters. A filler gives substance to the foundation while a blotter functions to absorb facial secretions. Oil-control foundations may have higher talc and kaolin levels to absorb facial sebum and prevent development of facial shine. Oil-control foundations are not necessarily oil-free, however.

Fulton suggested that the oil content of a foundation can be assessed by placing a drop of the product on a sheet of 25% cotton bond paper.

TABLE 1-1. TYPES OF FACIAL FOUNDATIONS

Type	Coverage	Wearability	Skin Type	Main Ingredients
Liquid	Sheer to moderate	Moderate	Any	Water, oil, TiO_2
Mousse	Sheer	Short	Oily to normal	Aerosolized liquid formulation
Water-containing cream	Moderate	Moderate to long	Dry to normal	Water, oil, wax, TiO_2
Souffle	Moderate	Moderate	Dry to normal	Whipped cream formulation
Anhydrous cream	Full	Long	Dry	Oil, synthetic esters, wax, TiO_2
Stick	Full	Long	Dry	Oil, wax, TiO_2
Cake	Full	Moderate to long	Oily to normal	Talc, kaolin, chalk, zinc oxide, TiO_2
Shake lotion	Sheer	Very short	Oily	Talc, water, solvent

See glossary for definition of terms.

Coverage: very sheer = transparent, sheer = semitransparent, moderate = translucent, heavy = semiopaque, full = opaque.

Wearability: very short = 2 hours, short = 3 hours, moderate = 4 hours, long = 8 hours.

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Oil-containing foundations will leave an oil ring on the paper while oil-free foundations will not. The size of the oil ring is proportionally related to the foundation's oil concentration.

Facial foundations are available in a variety of forms: liquid, mousse, water-containing cream, soufflé, anhydrous cream, stick, cake, and shake lotion (Table 1-1). Liquid formulations are most popular because they are the easiest to apply and generally give sheer to moderate coverage, which allows the underlying skin to be viewed, thus yielding the natural look that is a currently fashionable. As previously mentioned, they contain mainly water, oils, and titanium dioxide (TiO_2). If the liquid is aerosolized, a foam foundation known as a mousse is produced. A cream foundation has the additional ingredient of wax, which makes a thicker, occlusive, more moisturizing formula. If the cream is whipped, a soufflé foundation is produced. An anhydrous cream with no water in its formulation provides more occlusion and superior, long-lasting coverage. Addition of increased amounts of wax to an anhydrous cream yields a product that can be extruded into a rod and packaged in a roll-up lipstick-type tube. These are stick foundations. Cake-type foundations, also known as cream/powder foundations, consist of talc, kaolin, precipitated chalk, zinc oxide, and titanium dioxide compressed into a cake that is applied to the skin with a dry sponge (powder) or moistened sponge (cream). Shake lotions are pigmented talc suspended in water and solvents that evaporate, leaving a thin layer of powder on the face.

Facial foundations are also available in a number of finishes: matte, semimatte, moist semimatte, and shiny (Table 1-2). The finish is the surface characteristic of a cosmetic. Matte finish foundations yield a flat look with no shine and generally are oil-free. They are good for patients with oily skin who tend to develop some shine after a foundation has been applied. Foundation finish is somewhat dictated by fashion and a matte look was most popular in the late 1950s. A semimatte finish, the more popular look of the 1980s, has minimal shine and is generally an oil-free foundation or water-based foundation, with minimal oil content. This finish performs well on slightly oily and normal skin. A foundation with more shine is known as a moist semimatte foundation and is generally water-based with a moderate oil content. This look was most popular in the 1960s and performs well on normal to dry skin. Shiny finishes are found in oil-based foundations and are only appropriate for persons with dry skin. The shinier foundations with increased oil content also have increased moisturizing ability.

The foundation selected should match the natural facial color as closely as possible. This can be difficult, however, since the nose and cheeks have redder tones than the forehead and chin. A basic rule is to

TABLE 1-2. FACIAL FOUNDATION FINISHES

	Appearance	Formulation	Skin Type	Moisturizing Ability
Matte	Flat, no shine	Generally oil-free	Oily	 <div>Least</div> <div>Most</div>
Semimatte	Minimal shine	Oil-free or water-based	Oily to normal	
Moist semimatte	Dewy shine	Generally water-based	Normal to dry	
Shiny	Obvious shine	Generally oil-based	Dry	

See glossary for definition of terms.

match the foundation to skin along the jawline, since this is where the color must blend into the skin beneath the chin. Mismatched facial foundations generally leave a line at the jawline if they are not meticulously blended. A foundation color should also be selected in natural sunlight; the bright, artificial fluorescent lights used in most stores will distort color perception. This may result in selection of a dark foundation that will appear unnatural under more conventional lighting. The patient should be urged to apply a sample of foundation to the jawline in the store and then walk outside to examine the color match with a compact mirror.

In general, facial foundation should be applied with the fingertips. A dab of foundation should be placed on the forehead, nose, cheeks, and chin and then blended with a light circular motion until it is evenly spread over all the facial skin, including the lips. Finally, a puff or sponge should be used, stroking in a downward direction, to remove any streaks and to flatten vellus facial hair. Special care should be taken to rub the foundation into the hairline, over the tragus, and beneath the chin. Foundation should also be blended around the eyes and may even be applied to the entire upper eyelid if desired. The foundation should be allowed to set or dry until it can no longer be removed with a light touch. If additional coverage is desired, a second layer of foundation can be applied. Makeup sponges are used to apply cake foundation but otherwise are not recommended since they absorb a tremendous amount of foundation that is then wasted.

Facial foundations can be purchased at a mass merchandiser, drug store, department store, or boutique. Less expensive mass appeal foundations are sold by mass merchandisers and drug stores. More expensive, upscale foundations are sold by department stores and very expensive specialty foundations are sold by elite department stores and boutiques. Physicians are frequently asked by patients if they are getting higher

quality with an expensive cosmetic compared to a less expensive cosmetic. It is true that part of the cost of the more expensive cosmetics goes into attractive packaging and a prestige name or image. However, a wider range of colors is generally available with the more expensive product lines, and in some instances the increased cost yields superior ingredients that perform better. This seems to be the case especially with facial foundations. In general, the more expensive foundations have less color drift, better coverage, easier application, and more uniform appearance. Patients should probably be encouraged to spend the bulk of their cosmetic money on a superior foundation and then to save money by selecting good quality, less expensive moisturizers, cleansing agents, and other facial cosmetics.

The facial foundations currently available to the consumer have been arranged in table form according to skin type: acne and/or oily (see Table 1-4), normal (see Table 1-5), and dry (see Table 1-6). The tables are presented following discussion of the foundations appropriate for each complexion. Two tables have been included under each skin type, since certain foundations are marketed only through full-service cosmetic counters at department stores and boutiques while other foundations are marketed through drug stores, variety stores, grocery stores, and mass merchandisers. The cosmetic counter foundations are generally more expensive than other foundations. Relative costs have been included. Information on the presence of added fragrance or added chemical sunscreen agents is also given. Coverage (the ability to cover facial blemishes) is listed on a scale from sheer to full. Patients with more facial blemishes will require fuller coverage. Very sheer coverage indicates transparent, sheer coverage indicates semitransparent, moderate coverage indicates translucent, heavy coverage indicates semiopaque, and full coverage indicates opaque. Wearability, rated on a scale from short to long, refers to the length of time a foundation will remain in place on the face after application. Very short wearability is approximately 2 hours, short wearability is approximately 3 hours, moderate wearability is approximately 4 hours, and long wearability is approximately 8 hours. Patients who require that a foundation applied in the morning look presentable in the evening will need a product with long wearability. Color selection is important, since not all foundations are available in a shade to match the patient's skin. Lighter complexioned patients will require recommendations for a foundation available in fair tones while Hispanic or Oriental patients will need a darker foundation. Foundations for Black skin are listed separately under ethnic cosmetics (page 133). Foundation availability refers to the ease with which a product can be found by the patient. Products distributed by door-to-door salespersons or mail order

houses are not included because their availability varies tremendously from region to region. The foundation charts are intended to allow the physician to customize recommendations for foundations to the needs of each patient.

Many claims are made of certain cosmetic products, such as that they are hypoallergenic and unscented. These descriptions seem to dominate the cosmetic market of the 1980s. Hypoallergenic actually means decreased allergy, not allergy-free. Many hypoallergenic products have eliminated allergens such as lanolin, lanolin derivatives, and fragrances. Hypoallergenic products are not always fragrance-free, however. In addition, some hypoallergenic products contain quaternium-15, an antimicrobial and preservative, which is a known allergen. Therefore, it is conceivable that a patient could develop an allergic contact dermatitis to a hypoallergenic product. Unscented products are not always fragrance-free and usually contain a masking fragrance.

ACNE AND THE COMEDOGENICITY OF FACIAL FOUNDATIONS

Acne is characterized by open and closed comedones, pustules, papules, nodules, and cysts that may lead to pitted or hypertrophic scars. The condition is primarily seen in adolescents and is a self-limited disease involving the sebaceous follicles. The cause is unknown but is thought to be due to a combination of factors including altered follicular keratinization, increased sebum production, follicular bacterial and fungal flora, free fatty acid formation, and androgenic hormones. Acne primarily involves the face and, to a lesser degree, the back and chest.

In 1972, Kligman and Mills described a low-grade acne characterized by closed comedones on the cheeks of women ages 20 to 25 that they labeled acne cosmetica. Many of these women had not experienced adolescent acne. The authors proposed that substances present in cosmetic products induced the formation of closed comedones and, in some cases, a papulopustular eruption. Further work led to development of the rabbit ear comedogenicity model, which is currently the standard procedure many cosmetic companies use to test their products. The cosmetic is applied to the rabbit ear and either visual or microscopic examinations made to determine whether comedo formation occurs. There are several problems with the lists of comedogenic substances generated using this model. First, many studies relied on visual inspection of the rabbit ear, which is less sensitive than microscopic examination. Microcomedones,