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**The Science and
Practice of Pharmacy**
21st EDITION



LIPPINCOTT WILLIAMS & WILKINS



21 ST EDITION

Remington

**The Science and Practice
of Pharmacy**

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21 ST EDITION

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**The Science and Practice
of Pharmacy**



LIPPINCOTT WILLIAMS & WILKINS

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Remington: The Science and Practice of Pharmacy . . . *A treatise on the theory and practice of the pharmaceutical sciences, with essential information about pharmaceutical and medicinal agents; also, a guide to the professional responsibilities of the pharmacist as the drug information specialist of the health team . . . A textbook and reference work for pharmacists, physicians, and other practitioners of the pharmaceutical and medical sciences.*

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may occur with wavelengths as high as 500 nm; consequently, to protect recipients of certain drugs (tetracyclines, sulfonamides, erythromycin, promazine, chlorpromazine, promethazine, psoralens), sunscreens with a broader absorption spectrum are required. An adequately broad spectrum is usually achieved with combinations of sunscreens (eg, dioxybenzone and oxybenzone).

Melanizers are substances that promote the pigmentation of the skin. Most melanizers produce their effect by sensitizing the skin to UV light, so that the effect is principally the same as if the subject had been exposed for a long time to the sun.

This action is termed a *photodynamic action*. The term has been used loosely to include all instances of enhanced sensitivity to light, but in strict definition it is confined to photosensitization in which the participation of oxygen is required. In the photodynamic process, light of wavelengths too long to be ordinarily effective may be used, so that the activating spectrum may be shifted toward longer wavelengths.

Skin bleaches, or demelanizers, mostly contain hydroquinone derivatives.

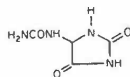
Hair bleaches generally contain peroxides.

There is a large variety of *depilatories* on the market. Many of them are sulfhydryl compounds, especially thioglycolates, which reduce the disulfide bonds of keratin, thus softening the hair to the point where it can be separated easily from the epidermis. Some of the same compounds are used in lower concentrations in hairwaving preparations. There is one drug, minoxidil, an antihypertensive drug, which can increase hair growth and treat baldness.

Antiperspirants have been included among the astringents.

ALLANTOIN

Urea, (2,5-dioxo-4-imid-azolidinyl)-,



[97-59-6] $C_4H_6N_4O_3$ (158.12).

Preparation—By oxidation of uric acid.

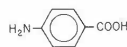
Description—Colorless crystals; melts at 238°.

Solubility—1 g in 190 mL water or 500 mL alcohol; nearly insoluble in ether.

Comments—In World War I it was noticed that maggot-infested wounds seemed to heal better than uninfested wounds, an effect attributed to this drug produced by maggots. It is used topically as a *vulnerary* to stimulate tissue repair in suppurating wounds, resistant ulcers, acne, seborrhea, cold sores, hemorrhoids, and various dermatological infections and psoriasis. It frequently is combined with astringents, keratolytics, coal tar, antiseptics, and antifungal drugs. The silver salt has been used in the topical treatment of extensive burns.

AMINOBENZOIC ACID

Benzoic acid, 4-amino-, PABA



p-Aminobenzoic acid [150-13-0] $C_7H_7NO_2$ (137.14).

Preparation—*p*-Nitrotoluene is oxidized with permanganate to *p*-nitrobenzoic acid, and the nitro group then is reduced to an amino group with iron and hydrochloric acid.

Description—White or slightly yellow, odorless crystals or crystalline powder; melts between 186° and 189°; discolors on exposure to air or light.

Solubility—Slightly soluble in water or chloroform; freely soluble in alcohol or solutions of alkali hydroxides and carbonates; sparingly soluble in ether.

Comments—A *sunscreens*. It absorbs UV light of wavelengths in the region of 260 to 313 nm; its molar absorptivity at 288.5 nm is 18,300. However, it does not absorb throughout the near UV range, so that drug-related photosensitivity and phototoxicity may not be prevented by it, in combination with benzophenone it does protect

against some drug-induced phototoxicities. Nevertheless, in the 260 to 313 nm range, it has the highest protection index of current sunscreen agents.

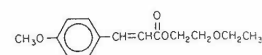
For animal species that do not use preformed folic acid, which contains the *p*-aminobenzoyl moiety, it is a B vitamin. However, man does not use it, and its promotion in vitamin preparations preys on the ignorance of the consumer. It or its potassium salt is promoted as an agent that softens or regresses fibrotic tissue in Peyronie's disease, scleroderma, dermatomyositis, morphea, and pemphigus. The claims for the antifibrotic actions are substantiated poorly, and the actions and uses are not mentioned in major works on pharmacology and therapeutics.

Topically, it is rarely allergenic to recipients, but phototoxicity and photoallergenicity occur. Systemic side effects include nausea, anorexia, fever, and rash.

CETYL ALCOHOL—page 1078.

CINOXATE

Propenoic acid, 3-(4-methoxyphenyl)-, 2-ethoxyethyl ester



[104-28-9] $C_{14}H_{18}O_4$ (250.29).

Preparation—Brit Pat 856,411.

Description—A viscous liquid; may have a slightly yellow tinge; boils about 185°.

Solubility—Practically insoluble in water; miscible with alcohol.

Comments—A *sunscreens* that absorbs UV light at 270 to 328 nm and has a relatively high molar absorptivity (19,400 at 306 nm) but is nonabsorbing throughout the entire offending range of UV light. Consequently, it is used principally in preparations intended to promote tanning rather than to protect against photosensitivity and phototoxicity.

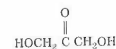
DEXTRANOMER

For the complete monograph, see page 1290.

Comments—For drying, cleansing, and debridement of exudative venous stasis ulcers; infected wounds and burns; it is not useful for cleansing nonexudative wounds or lesions. The beads not only absorb water but also proteins, including fibrin/fibrinogen degradation products, and thus prevent encrustation. The beads are poured into the cleansed wound, which is circumscribed with petroleum jelly, and a compress is taped in place to retain the material. Changes may be made up to three or four times a day, as needed. The beads must be removed before skin grafting is attempted. Care must be taken to prevent cross-contamination from patient to patient. On the floor the beads are slippery and thus hazardous.

DIHYDROXYACETONE

Chromelin Complexion Blender



[96-26-4] $C_3H_6O_3$ (90.08).

Preparation—By oxidation of the secondary alcohol group of glycerin.

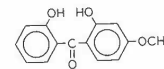
Description—Crystalline powder; fairly hygroscopic; characteristic odor; sweet taste; melts about 77°.

Solubility—*Dimer* (normal form): slowly soluble in 1 part water or 15 parts alcohol. *Monomer* (formed in solution): very soluble in water, alcohol, or ether.

Comments—Interacts with keratin in the stratum corneum to form a dark pigment that simulates the appearance of a suntan. It is incorporated in several *sunscreens* preparations. Since the sunscreen component is usually present in a concentration lower than optimal, such preparations may not provide protection to photosensitive persons. Also used to treat vitiligo.

DIOXYBENZONE

Methanone, (2-hydroxy-4-methoxyphenyl)(2-hydroxyphenyl)-, Solaquin



2,2'-Dihydroxy-4-methoxybenzophenone [131-53-3] $C_{14}H_{12}O_4$ (244.20)