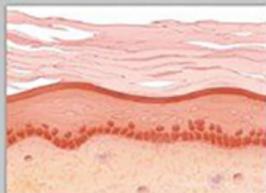


Lasers and Light, Peels and Abrasions

Applications and Treatments

William H. Truswell IV



35 The Future of Rejuvenation Techniques for Aging Facial Skin

Donn R. Chatham

35.1 “Prediction Is Very Difficult—Especially if It’s About the Future”

In the absence of my trusty but rusty crystal ball, where will the future of skin rejuvenation take us? Just a few short years ago skin rejuvenation seemed limited to lay chemical peels, dermabrasion, “fruit acid” baths, and trauma. Today’s landscape is much different.

Let’s begin with a review of the physiological changes associated with aging and the multitude of genetic and environmental factors that play key roles in the health and appearance of skin. We focus on the ability of skin to manufacture epidermis, collagen, and elastin; its ability to protect itself from sun and other environmental insults; how well its internal antioxidation

effect or not and analysis of ingredients taxes the analytical skills of most chemists. Efficacy can also vary from one person to another: one individual’s life-saving prescription may be another’s poison. How can we know who will benefit from a medication, who will not respond at all, and who will experience adverse drug reactions?^{16,7}

One helpful tool is deoxyribonucleic acid (DNA) analysis via a buccal mucosal swab that analyzes genetic neurotransmitter biomarkers. Certain enzymes are necessary for proper drug (and some foods) metabolism and when absent place the patient at increased risk of untoward problems, including ones that could be fatal.⁸ DNA analysis is currently available to assist physicians in helping determine which patients are more likely to positively respond to certain classes of psychotropic medications and which patients are at increased risk of adverse reactions. Therefore safety and efficacy of some psychiatric

The Future of Rejuvenation Techniques for Aging Facial Skin

Some devices first penetrate the skin with microneedles prior to energy delivery, attempting to precisely target and deliver measured RF energy directly into the dermis.^{16,17} Other RF skin-tightening devices include those directly contacting the skin surface creating subablative/microablative effects.^{18,19} Still other instruments use US waves that induce a molecular vibra-

tion in a given tissue creating thermal coagulative focal necrosis.²⁰

And yet other tools are contactless (“no-touch”) devices with panels that deliver IR thermal energy using frequencies and impedance variances based on tissue levels.²¹ Electromagnetic energy is converted to heat and currently targets adipose tissue. And whereas most neuromodulators/neurotoxins are injected subcutaneously to affect muscle function, the use of intradermal injections continues to be studied, including measurable changes in skin elasticity (D. Ellis, email communication, January 2014). Research also continues in the search for an ideal topical wound-healing accelerator.^{22,23} ▶ Fig. 35.2 shows the

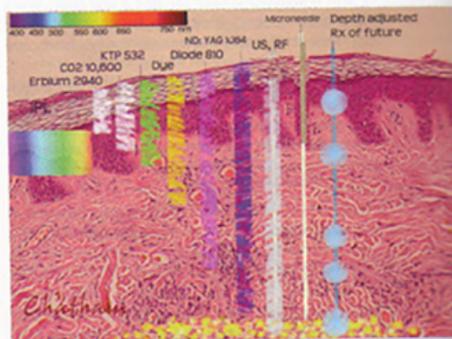


Fig. 35.2 Light spectrum, relative skin penetration of laser wave-