Skin Diagnostic and Therapeutic Opportunities

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Noninvasive skin delivery techniques are considered as a very latent alternative of conventional diagnostic and therapeutic techniques which could cause painful or traumatic responses. Interestingly, through the skin as "window of body", many kinds of drugs can be delivered and various biomarkers of diseases can be collected. Here, we report on skin opportunities: the diagnostic opportunity using new reagents and the acne therapeutic opportunity using photothermal mechanism. New cell lysis reagents facilitated skin biomarker sampling and especially have excellent activity preservation depending on quaternary structure. This reagent is successfully commercializing and can be widely applied to the biomarker sampling agent including a platform for skin diseases. Second, as a chromophore, nanoparticles were delivered using ultrasound to hair follicle and sebaceous gland. On the nanoparticles, the energy of near infrared laser was transferred to heat energy. Heat energy can thermally damage the focused acne targets. Ex vivo pig ear study showed successful NPs delivery and thermal damage to sebaceous glands. Now, this technique is under clinical trials and initial clinical results showed a promising new acne therapy without side effects of drugs.