

〈シンポジウム II〉「環境と皮膚」

体内環境と皮膚 細胞外マトリックスと皮膚

生体 SHG 光(第 2 高調波発生光)イメージングを
用いた真皮コラーゲン線維の観察

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Observation of Dermal Collagen Fiber with Second-Harmonic-Generation Imaging

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Abstract

Second-harmonic-generation (SHG) imaging has been applied to observe collagen fiber structure in porcine dermis. Difference of collagen fiber structure among different sliced samples is clearly visualized as high contrast SHG images using a transmission-mode SHG microscope equipped with a mode-locked Ti : sapphire laser having a center wavelength of 800 nm. Furthermore, we have developed a reflection-mode SHG microscope equipped with a mode-locked Cr : forsterite laser having a center wavelength of 1250 nm for optical-sectioning of dermal collagen fiber in thick porcine skin every 20- μ m depth, and confirmed that the collagen fiber structure in the dermis is spatially evolved along the depth direction.

Key words: second-harmonic-generation, collagen, femtosecond laser, dermis, microscope.