Human skin autofluorescence in health and eczema

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Human skin admittedly contains endogenous fluorophores distributed in various concentration in different skin layers [1]. The skin endogenous fluorophores include tyrosine, tryptophan, collagen, keratin, nicotinamide adenine dinucleotide, elastin and others [2]. All these fluorescent compounds exhibit changes in fluorescence characteristics related to modifications of skin functionality.

Our aim was to examine endogenous skin fluorescence (autofluorescence) by fluorescence spectroscopy method. We compare skin on fifth finger – *digitus minimus* of atopic dermatitis (eczema) and healthy skin (Fig. 1). The Luminescence Spectrometer LS 55 (PerkinElmer, Beaconsfield, UK) with Remote Fiber Optic Accessory (PerkinElmer) and BS Studio Software was used, as described previously [3]. The Excitation-Emission Matrix (EEM) was collected with excitation wavelength from 260 nm to 450 nm in 10 nm steps and emission wavelength from 280 nm to 650 nm with step 0.5 nm. The EEM represent the relation between the fluorescence intensity and excitation and emission wavelength.

Our preliminary experiments with complex fluorescence monitoring of eczema skin show differences in some regions of EEM in eczema skin and healthy skin. This emphasize the utilization of modern fluorescence techniques as prospective candidates for fast, safe, highly sensitive, and non-invasive monitoring of the human skin condition even in *in vivo* mode and its potential usage in dermatology.

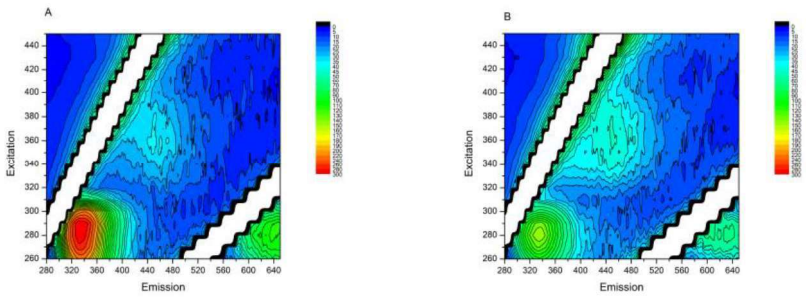


Fig. 1. The Excitation-Emission Matrix of skin autofluorescence on fifth finger – digitus minimus of (A) atopic dermatitis (eczema) and (B) healthy skin.

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