The effects of steroidal anti-inflammatory drug on gelatinase expression from keratinocyte

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Matrix metalloproteinase (MMP)-2 and 9 are known as gelatinases to act for tissue metabolism in a variety of inflammatory conditions, which includes blistering diseases, eczema and atopic dermatitis, and apoptotic conditions in the field of dermatology. In comparison with MMP-2, MMP-9 is reportedly served as an inducible enzyme and TATA box along with many regulatory elements on its promoter region for the transcription has been elucidated.

Kobayashi reported that KRE-M9 on the MMP-9 promoter works for the suppression of MMP-9 transcription by binding to poly (ADP-ribose) polymerase-1 (PARP-1), which is abrogated by caspases activity to act for the fragmentation of PARP-1 [Apoptosis 16: 1205-16, 2011].

We also reported the inflammatory model using cultured keratinocytes in the stimuli for 1) differentiation including dyskeratosis by high calcium concentration or by the addition of transforming growth factor (TGF)-β and for 2) inflammation and apoptosis by the addition of tumor necrosis factor (TNF)-α or of interleukin (IL)-1α, and discovered the effects of leptomycin B as an anti-inflammatory drug [J Invest Dermatol 124:331-7, 2005, Japanese patent: 4480128, PCT/JP03/12898].

Because steroidal anti-inflammatory drugs have widely been used as a topical treatment for inflammatory conditions in the skin so far, we report here the effects of steroid using betamethasone phosphate on the expressions of MMP-2 and 9 from cultured keratinocytes in the inflammatory model as described above.