



AUTOIMMUNE BULLOUS DISEASES

EFFECT OF SERUM FROM PATIENTS WITH PEMPHIGUS VULGARIS ON THE TRANSCRIPTION AND PROTEIN EXPRESSION OF DSG AND MMP-9 MRNA IN HACAT CELLS

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Background: Pemphigus vulgaris (PV) is associated with autoantibodies against desmoglein (Dsg)1, Dsg3. However, the precise mechanism of acantholysis remains controversial. And whether MMP-9 is involvement in the process of acantholysis remains unclear.

Objective: To explore the effect of Dsg antibody on the transcription and protein expression of Dsg and MMP-9 mRNA in HaCaT cells co-cultured with PV-serum containing DMEM medium.

Methods: Taking the third-generation cell culture to logarithmic growth phase and cultured continuously for 18 hours in DMEM medium containing 5% PV-serum, and then cells were collected for total RNA extraction. The level of mRNA transcription level and protein expression for Dsg1, Dsg3 and MMP-9 gene was evaluated by Q-PCR and Westernblot assay respectively, and The condition of Dsg1 and Dsg3 protein in cells were detected by immunofluorescence monoclonal antibody assay.

Results: When compared with regular DMEM medium, the transcription levels of Dsg1, Dsg3 and MMP-9 genes in cells increased by 329%, 300% and 300%, respectively. Accordingly, The Ct threshold by Q-PCR for the three gene was significantly lower than that of the corresponding normal group ($P < 0.01$ for all comparison), and also PV-serum containing DMEM increased the expression of Dsg1 and Dsg3 protein on the surface of cells by 1.1 times and 1.3 times, respectively. Fluorescent monoclonal antibody detection showed that the linear fluorescence of Dsg1 on the surface of cells in PV-serogroup disappeared, and in the replace of granular and agglomerated fluorescent particles on the cell surface and cytoplasmic membrane, while Dsg3 linear fluorescence still existed, though the intensity was weaker than regular group.





Conclusion: It is concluded from our study that The Dsg3 antibody disrupts the desmosome junction by inducing endocytosis and cleavage of Dsg1, Dsg3, resulting in desmosomes dissociation, and MMP-9 may be involved in this process.

Keywords: Pemphigus vulgaris, Desmoglein, MMP-9, HaCaT, Acantholysis

