

INFLAMMATORY SKIN DISEASES (OTHER THAN ATOPIC DERMATITIS & PSORIASIS)

TIGHT JUNCTION RECOVERY EFFECTS OF RUBUS COREANUS SEED EXTRACT ON SKIN BARRIER DISRUPTED IN VITRO MODEL

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Background: The skin barrier is the outermost stratum of the skin, composed of various epidermal tight junction proteins. Tight junctions leading to a diminished skin barrier function are major causative factors for aged dehydrated skin or inflammatory skin disorders including atopic dermatitis. Recently, extracts of Rubus coreanus fruit showed anti-inflammatory and anti-oxidant effect on skin. Also, Rubus coreanus seed oil extract (RCSO) is known to contain essential fatty acids including omega-3 and omega-6 fatty acids which are a major functional ingredient.

Objective: This study was designed to investigate the effect of RCSO on the function of skin barrier.

Materials and Methods: To evaluate the safe dosage of RCSO, cell viability test was performed. 2D and 3D skin barrier disruption in vitro models were designed with histamine and PAR2 agonist to evaluate the recovery effects of tight junctions with RCSO. The expression of epidermal tight junction proteins was measured to detect the change of skin barrier functions by real-time PCR and ELISA.

Results: The addition of histamine to 2D and 3D skin models reduced the expression of differentiation-associated genes(DAG) and epidermal junction proteins(EJP). RCSO has increased the expression of EJP but not DAG. The expressions of occludin, claudin-23 and loricrin have been significantly increased by RCSO. Also, the expression level of filaggrin and ZO-1 has shown to be increased in RCSO treated 3D skin.

Conclusions: In conclusion, our study demonstrated that RCSO can be an ingredient of skin restoring agent for treating disrupted skin barrier conditions such as aged dehydrated skin or inflammatory skin disease such as atopic dermatitis through recovery effects of tight junction proteins.