Dermal papilla (DP) is a pivotal part of hair follicle, and the smaller size of the DP is related with the hair loss. In this study, we investigated the effect of titrated extract of *Centella asiatica* (TECA) on hair growth inductive property on 3D spheroid cultured human DP cells (HDP cells). Significantly increased effect of TECA on cell viability was only shown in 3D sphered HPD cells, not in 2D cultured HDP cells. Also, TECA treatment increased the sphere size of HDP cells. The luciferase activity of STAT reporter genes and the expression of STAT-targeted genes, SOCS1 and SOCS3, were significantly decreased. Also, TECA treatment increased the expression of the hair growth-related signature genes in 3D sphered HDP cells. Furthermore, TECA led to downregulation of the level of phosphorylated STAT proteins in 3D sphered HDP cells. Overall, TECA activates the potential of hair inductive capacity in HDP cells.

TECA induced the significant enhancement of the 3D sphere formation (A) and the hair growth inductivity of HDP cells by inhibiting the STAT activation (B).