Comparative analysis of tender and mature *Hemigraphis colorata* leaves on TGF-β activity in wound healing and molecular characterisation of plant extracts

Treesa Joy[1], Akhila G Krishnan[1], Mohankumar C[2] & Salini Bhasker[2]*

[1]Biotechnology Division, SCMS School of Technology & Management, South Kalamassery, Cochin 682033, Kerala, India

[2]Scopeful Bioresearch (SBR), KRIBS-BIONEST, KINFRA-HI TECH Park, Kalamassery, Kochi 683503, Kerala, India

Received 05 May 2023; revised 04 March 2024

With rising demand for effective and sustainable measures in wound healing researchers are compelled to explore diverse methods that combine folk medicine with existing wound care to double the impact. *Hemigraphis colorata* (Blume) H G Hallier, an exotic plant in the Acanthaceae family, is a perennial herb that has potential therapeutic benefits. In the present investigation, a comparative study was conducted between the effect of tender and mature leaf extracts of *H. colorata* as well as the differentially expressed genes of both leaves using four upstream primers and one downstream ($HT_{11}C$) primer. The rate of cell migration was studied by creating a scratch wound in HaCaT monolayer culture. The finding indicated that the application of tender leaf extract resulted in a higher rate of wound closure, whereas the mature leaf extract led to a two-fold increase in the secretion of TGF-β protein, as measured by ELISA. This demonstrates the therapeutic effectiveness of tender leaf extract in promoting wound healing compared to mature leaf extract. Additionally, the results of DDRT-PCR unveiled a diverse range of differentially expressed genes, which were registered as molecular markers (ESTs) and did not show homology with any known gene sequences in the NCBI database.

Keywords: DDRT-PCR, Differentially expressed genes, Expressed sequence tags, HaCaT (Human keratinocytes) cells, RNA profiling, Sequence analysis