

Knock down of WEE1 gene induce Cytotoxic effect in Hairy Cell Leukemia

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BACKGROUND

Hairy cell leukemia (HCL) is a rare B-cell lymphoid neoplasm with morphological variations that can be difficult to distinguish. A BRAFV600E mutation is found in 80 percent of patients. Despite the fact that purine analogues (PNA) with or without anti-CD20 antibodies remain the first-line treatment, resistance is still a major issue that has a severe impact on patient outcomes. The successful therapeutic application of short interfering RNA (siRNA) in tumor suppression is being paved by gene silencing. In the cell cycle, the WEE1 gene is the master inhibitor of cyclin dependent kinase 1. Cumulative data suggests that the WEE1 gene plays a definite function in cell biological processes, and that silencing the WEE1 gene could have a variety of implications in cancer cells.

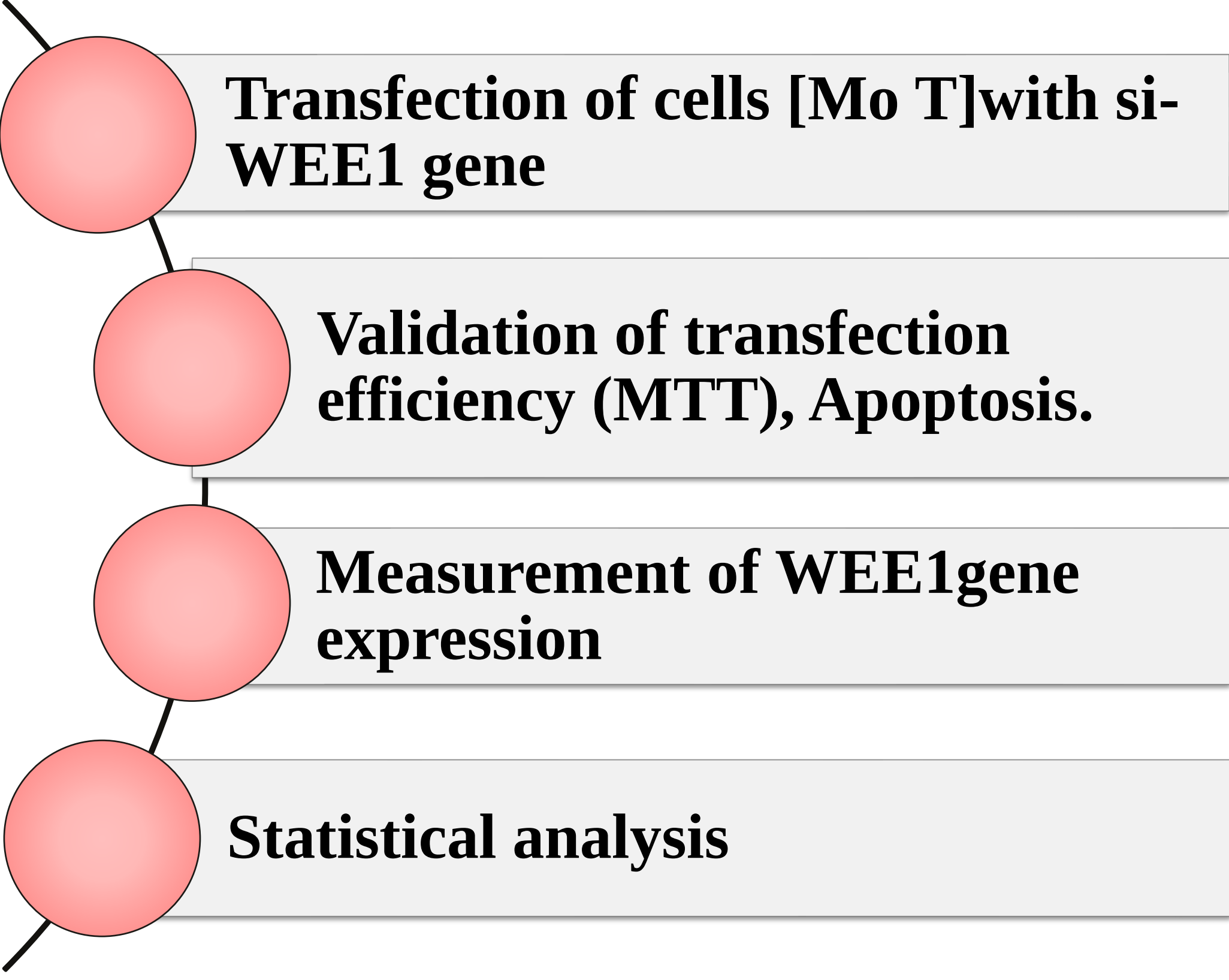


It acts as an **oncogene** in various types of hematological malignancies. Additionally, WEE1 **over-expression** was detected in several solid and hematological malignancies.

OBJECTIVES

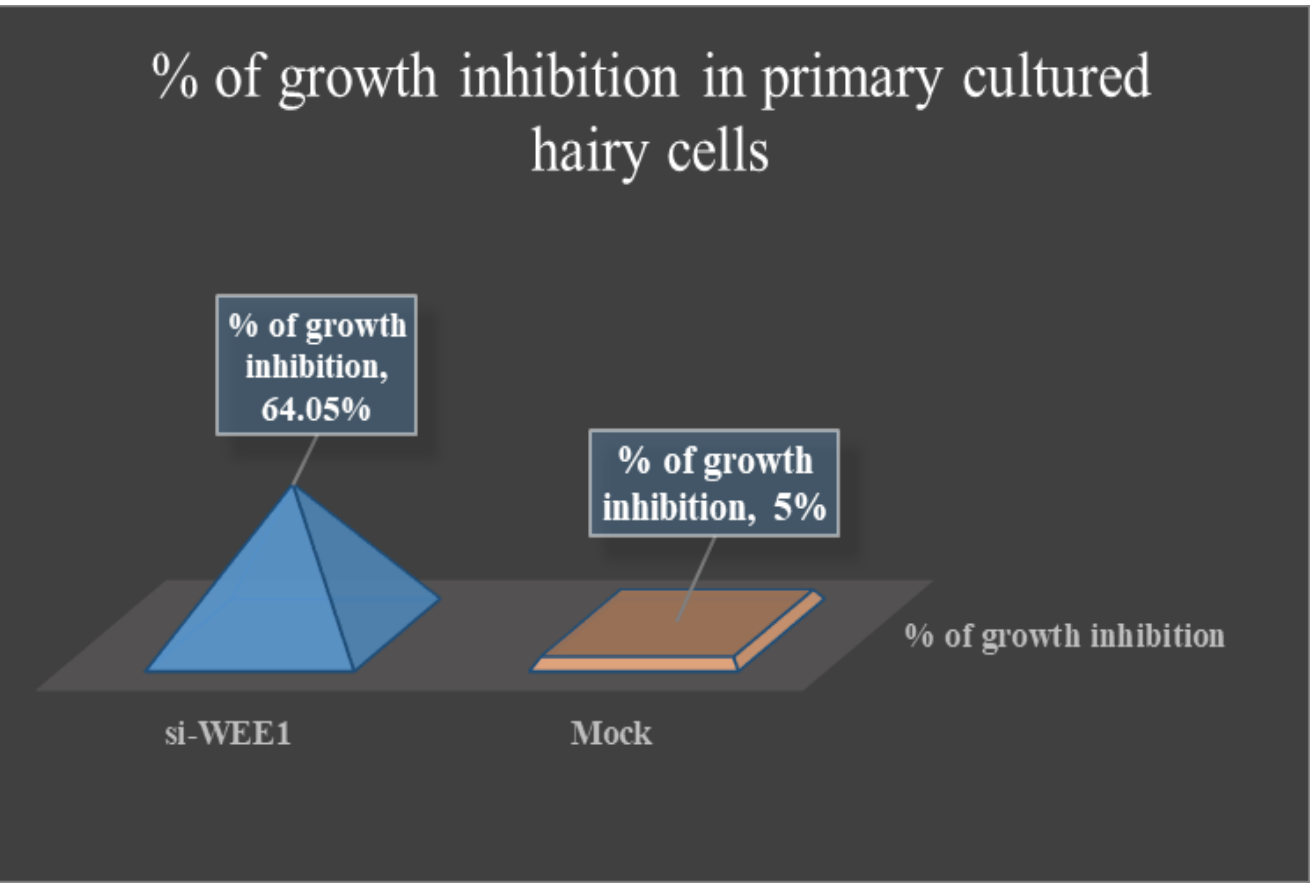
The purpose of this study being how ex vivo knocking down of the WEE1 gene affects the viability of hairy cell leukemia (HCL) cells, in order to see if it has therapeutic potential.

MATERIALS & METHODS



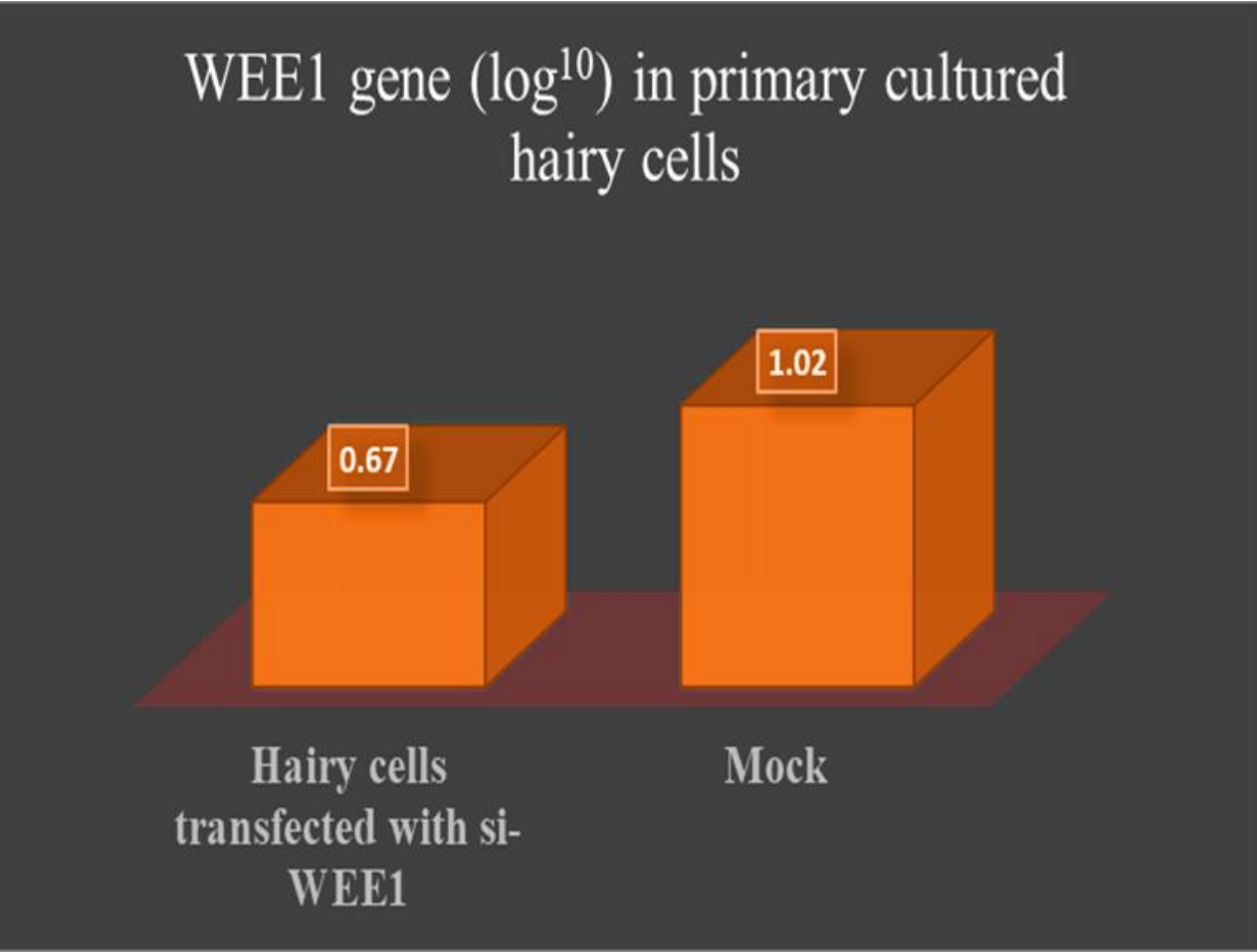
RESULTS

Transcriptional silence of WEE1 gene induces cytotoxic effect on Mo T cells



Our results showed a significant association between silencing of WEE1 gene and reduction in cell proliferation. The percentage of inhibition in si-WEE1 transfected cells was (64.05%) compared to the untreated cells (5%).

The expression of WEE1 gene ($\log^{10}$) in primary cultured Mo T transfected with WEE1 inhibitor. Mo T cells showed low expression of WEE1 gene in transfected cells (0.28).



CONCLUSION

In Mo T cells, silencing the WEE1 gene resulted in a significant cytotoxic effect, suggesting that knocking down the WEE1 gene could be a promising therapeutic target in HCL.

REFERENCES

Geenen, J. J. J., & Schellens, J. H. M. (2017). Molecular pathways: Targeting the protein kinase Wee1 in cancer. *Clinical Cancer Research*, 23(16), 4540–4544. <https://doi.org/10.1158/1078-0432.CCR-17-0520>