**Title: Study the effect of DNA methyl transferase inhibitor on the expression of telomerase enzyme in Squamous cell carcinoma cell lines**

**Sepide Atri[[1]](#footnote-1), Nikoo Nasoohi1, Mahshid Hojat[[2]](#footnote-2)**

1Department of Biochemistry,Faculty of Advanced Science and Technology,TehranMedical Sciences,Islamic Azad University,Tehran,Iran.

2Dentistry Research Institute, Tehran University of Medical Sciences (TUMS), Tehran, Iran

**Abstract**

Activation of telomerase is one of the most important steps in carcinogenesis via telomeres stability. Almost 90 percent of human cancers express telomerase. Thus, inhibition and controlling of this enzyme may provide potential therapeutic targets for the treatment of cancer. Epigenetic mechanisms have important role in controlling the expression of many genes involved in cancer initiation and progression. This study aimed to evaluate the effect of DNA methyl transferase inhibitors on the expression of telomerase enzyme and its relationship with cell viability and migration of squamous cell carcinoma cell lines (SCC).

**Methods:**

SCCs (CAL27 and FADU) were cultured in DMEM containing 10% FBS and treated with different concentrations of azacitidine (1 to 30 ) for 24 hours. Cell viability were evaluated by means of MTT test. Wound healing test was used to investigate migration and the expression of TERT gene was evaluated using Real time PCR.

**Results:**

Results of MTT test demonstrated that azacitidine at >5 concentrations exert cytotoxic effect on both cell lines. Results of wound healing test showed decreased mobility and migration of cells treated with azacitidine. The Real time PCR also showed significant decrease in the expression of TERT gene in response to azacytidine.

**Conclusion:**

This study suggest that DNA methyltransferase inhibitor can affect the telomerase gene expression and eventually reduce viability and mobility of SCCs. Further studies on epigenetic modifiers and their effect on telomerase activity and the detailed regulating mechanisms can be helpful in finding specific therapeutic methods for various cancers.

**Key words:** Telomerase, Epigenetic Modification, Squamous Cell Carcinoma.

1. [↑](#footnote-ref-1)
2. [↑](#footnote-ref-2)