ABSTRACT

**Background:** Mesenchymal Stem Cell (MSC) is a type of cell that can be used to repair damaged tissue. The success of using MSC therapy in tissue repair process is influenced by proinflammatory mediators such as TNF-α serves to activate the MSC. At activated MSC faster tissue damage repair mediators such as VEGF that serves to angiogenesis. The absence of VEGF would slow down the process of wound healing. This study aimed to determine the effect a low dose of serum of TNF-α on the VEGF level in activated MSC.

**Method:** MSC cells were divided into 4 groups. One control group and 3 treated groups (treated with serum of TNF-α at a concentration of 12.5% or 6.25% or 3.12%,) and were incubated for 2 days. The type of research conducted a study Post Test Only Control Group Design with 3 times replication. Data were analyzed with the Kruskal Wallis test. Data were tested with One Way Anova followed by LSD Post Hoc test.

**Result:** Mean levels of VEGF for the four groups were 27.19 ± 0.28 pg/ml, 27.77 ± 0.30 pg/ml, 30.86 ± 2.05 pg/ml, 29.78 ± 1.18 pg/ml, respectively.

**Conclusion:** The treatment of TNF-α increases the level of VEGF in the activated MSC.

**Keyword:** Mesenchymal Stem Cell, TNF-α, VEGF