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THE TOXICITY AND PROLIFERATION EFFECT OF *FICUS CARICA* ON HUMAN WHARTON'S JELLY MESENCHYMAL STEM CELL BY MTT ASSAY

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SUMMARY

Recently, it has become a global trend towards the use of natural phytochemicals present in natural products especially for medicine. *Ficus carica* also known as fig is a native Mediterranean fruit enriched with nutrients and pharmacological compounds. However the potential therapeutic effects of *Ficus carica* on stem cell such as mesenchymal stem cells still remain elusive. Therefore, the objective of this study is to determine the effect of *Ficus carica* on Human's Wharton's jelly mesenchymal stem cells. Umbilical cords from healthy donors undergoing caesarean section were collected with informed consents and subjected for WJMSCs isolation. WJMSCs were cultured in complete α-MEM medium for 7 days and the proliferation rate was calculated. Then, the viability of WJMSCs at passage 3 treated with various concentrations of water-based extract of *Ficus carica* for short term and long term were determined via MTT assay at day 1, 3, 5 and 7. As the results, the proliferation rate of WJMSCs was 0.58543 ± 0.34629 h^{-1}. The growth rate of the cells was 0.01328 ± 0.00320 h^{-1} and the population doubling time was 2.60 ± 1.17. At the short-term period of culture, we found that *Ficus carica* increased the cell number at 0.39 mg/ml onwards. However, the cell number is reduced after 25 mg/ml and reduced half of cell's population at 100 mg/ml. At the long-term period of culture, the cell number were increased for about 2 folds higher after 7 days culture in 0.39 mg/ml. However, as the concentration higher, cell number is decreasing which similar to the short-term culture data. Morphologically, the cells became shorter in length and smaller at high extract concentration when compared to lower concentration. As a conslusion, *Ficus carica* has a proliferative effect on Wharton's jelly mesenchymal stem cell at low concentration whilst the extract become toxic at high concentration.