9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Key Lectures

K-6
The positive effect of kaempferol on fibroblast cell reprogramming

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The reprogramming of differentiated cells creates a suitable source of pluripotent cells, which could be achieved via using Yamanaka factors, the most common method. The low efficiency of this reprogramming is challenging. In order to increase efficiency, various methods have been tested before.
Using of small molecules, especially natural ones, for elevating of reprogramming efficiency are recently more considered. Of this group, Kaempferol, for the known epigenetic and anti-oxidant effects on stem cells used in our study.
Recombinant fibroblast cells, with inducible Yamanaka factors (FUW-tetO-hOKMS) gene cassette, exposed to different concentrations (1, 5, and 10 µM) of Kaempferol (K group) and 0.5 mM of sodium butyrate (S group) separately for 5 days, before the cassette induction until iPS cell like colonies formation. Cellular morphology changes of these samples were evaluated quantitatively and qualitatively. The molecular assays including qRT-PCR and IF of pluripotent markers will be performed ahead.
The first cell morphological changes were observed on the fifth day after tetO-hOKMS cassette induction in case (K) and control (S) groups. Quantitative and qualitative morphological examinations of cells showed that embryonic-like colonies were only formed among cells treated with 5 µM Kaempferol (two colonies) and cells treated with sodium butyrate (one colony). However, the failure in the expansion of these small numbers of colonies has made it difficult to continue research.
The low number of embryonic-like colonies compare to the results obtained from similar studies indicates the low efficiency of reprogramming likely due to our poor performance and the work requires more repetitions and removal of the reprogramming induction barriers. However, by considering the similar positive efficacy of Kaempferol to the sodium butyrate (as a common reprogramming agent) in cell reprogramming, it makes sense that more studies on Kaempferol effects on cell reprogramming.