

The effect of apigenin on the development of mouse embryos in vitro

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Introduction : Infertility is considered as a major health care problem in different communities. The high prevalence of this issue doubled its importance. Recently, using assisted reproductive technology (ART) has emerged more favorable status. It is well known that in vitro embryo development can be damaged by several stressors, such as visible light or high oxygen concentration. Moreover, blastocyst formation during ART is not desirable, and the use of antioxidants may improve it. Apigenin is a member of the flavone subclass of flavonoids present in fruits and vegetables. Apigenin has various biological activities, including antioxidant, anti-inflammatory, anti-mutagenic, and anti-tumorigenic properties. The goal was to evaluate the effect of apigenin on in vitro embryo development and the hatching rate of blastocysts in mice; given that this research has not been done to date.

Materials and Methods : In this experimental study 140 two-cell mouse embryos were randomly divided into two groups: I. Control group, without any treatment and II. Apigenin group, 10 μ M/L of apigenin was added into the culture medium. The embryo development was evaluated and the percentage of embryos that reached to morula, blastocyst and hatched blastocyst stages was calculated. Comparison between the experimental and the control groups was analyzed by X^2 test and a difference with $P < 0.05$ was considered statistically significant.

Results : The results showed apigenin had an antioxidant effect on embryo development so that the development of embryos in apigenin group was more favorable than control group. Moreover, the percentage of embryos that reached to morula, blastocyst and hatched blastocyst stages was higher than control group ($P < 0.05$).

Conclusion: The results suggest that apigenin may have an antioxidant effect on mouse embryos in vitro so that apigenin improves embryo development and increases hatching rate for successful implantation.

Keywords: Apigenin, Embryo culture, Antioxidant, Blastocyst, Hatching.