

Correlation Between Smoking, Estradiol Concentration, Oocyte Maturation and Early Embryonic Development During In Vitro Fertilization in Women.

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- **Abstract:** Background: Smoking is a serious health issue and one of most important risk factors that led to infertility in women. There are conflicting reports regarding the impact of cigarette smoke on estradiol production and the oocyte and post-fertilization development in vitro. Methods: The current study include 60 infertile women undergoing intracytoplasmic sperm injection (ICSI). Depending on smoking status, infertile women were divided into three groups, non-smoker (n=25), active smoker (n=10) and passive smoker (n=25). The serum and follicular fluid samples were obtained at the day of ovum pick up. Maturation status of oocyte and post fertilization development were evaluated microscopically. Cotinine level of all participant women was measured by ELISA and resulted data were correlated statistically with study parameters. Results: The study reveals no significant difference between groups and the cotinine concentration in serum and follicular fluid. Also, oestradiol was not different at day-2 and at trigger between groups. Moreover, day 1 (two pronucleus 2PN) and day 2 post-fertilization embryos (=4 blastomeres) was not different. However, the level of E2 at Day2 was positively correlated with total retrieved oocyte ($p = 0.05$), oocyte at germinal vesicle (GV) ($p = 0.01$), metaphase I (MI) and metaphase II (MII) ($p = 0.05$). Conclusion: We conclude that serum oestradiol levels were not correlated to smoking status or to serum or follicular fluid cotinine levels. However, high serum E2 level at Day2 is associated with increased oocyte yield and number of matured oocytes.
- **Keywords:** Smoking, Health issue, intracytoplasmic sperm injection