

# OOCYTE EXPOSURE TO GENISTEIN IMPAIRS DEVELOPMENT AND QUALITY OF IN VITRO-PRODUCED BOVINE EMBRYOS



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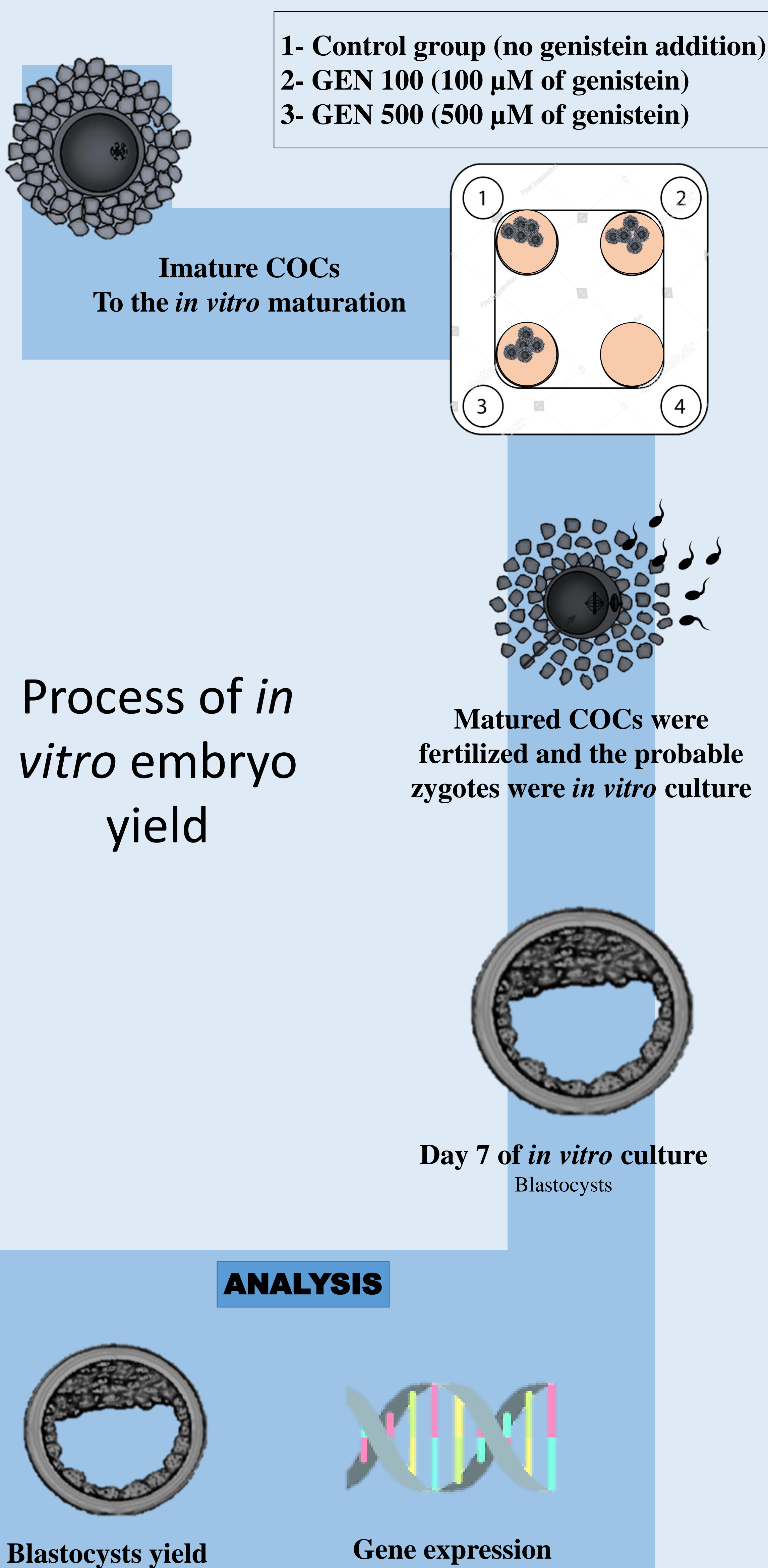
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## INTRODUCTION AND OBJECTIVE

Human and animal contact with genistein is mainly through the consumption of soy-based products and its derivatives. It is known that genistein, the main isoflavone present in soy, affects the reproductive processes due to a potent steroidogenic action. Intrauterine exposure to genistein is able to affect reproductive system the offspring, increasing uterine cancer and causing changes in the testicular epithelium. To understand the effects of genistein on embryonic development, we aimed to evaluate effects of genistein during cumulus-oocyte complexes (COCs) maturation on the production and quality of bovine embryos produced *in vitro*.

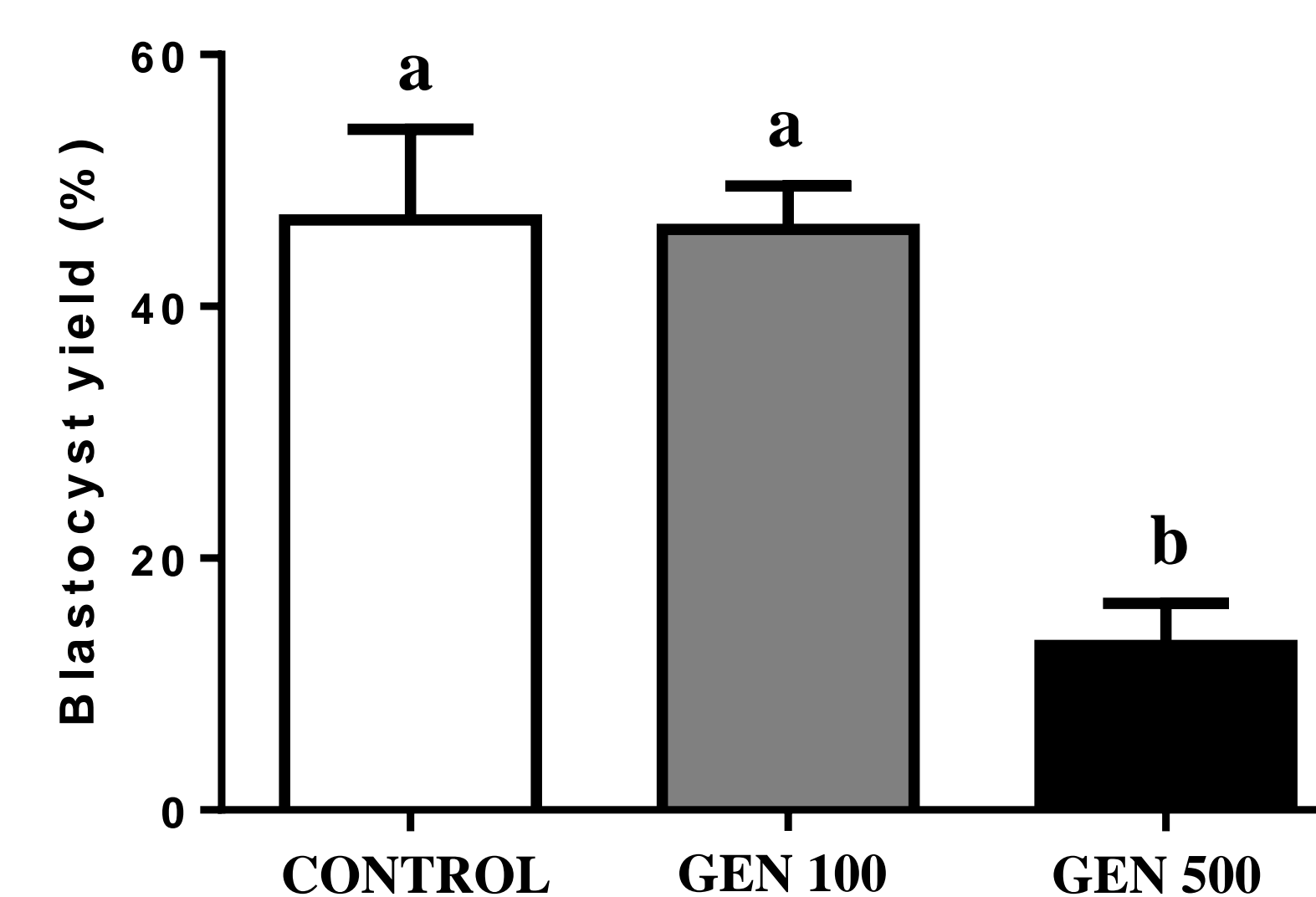
## MATERIAL AND METHODS



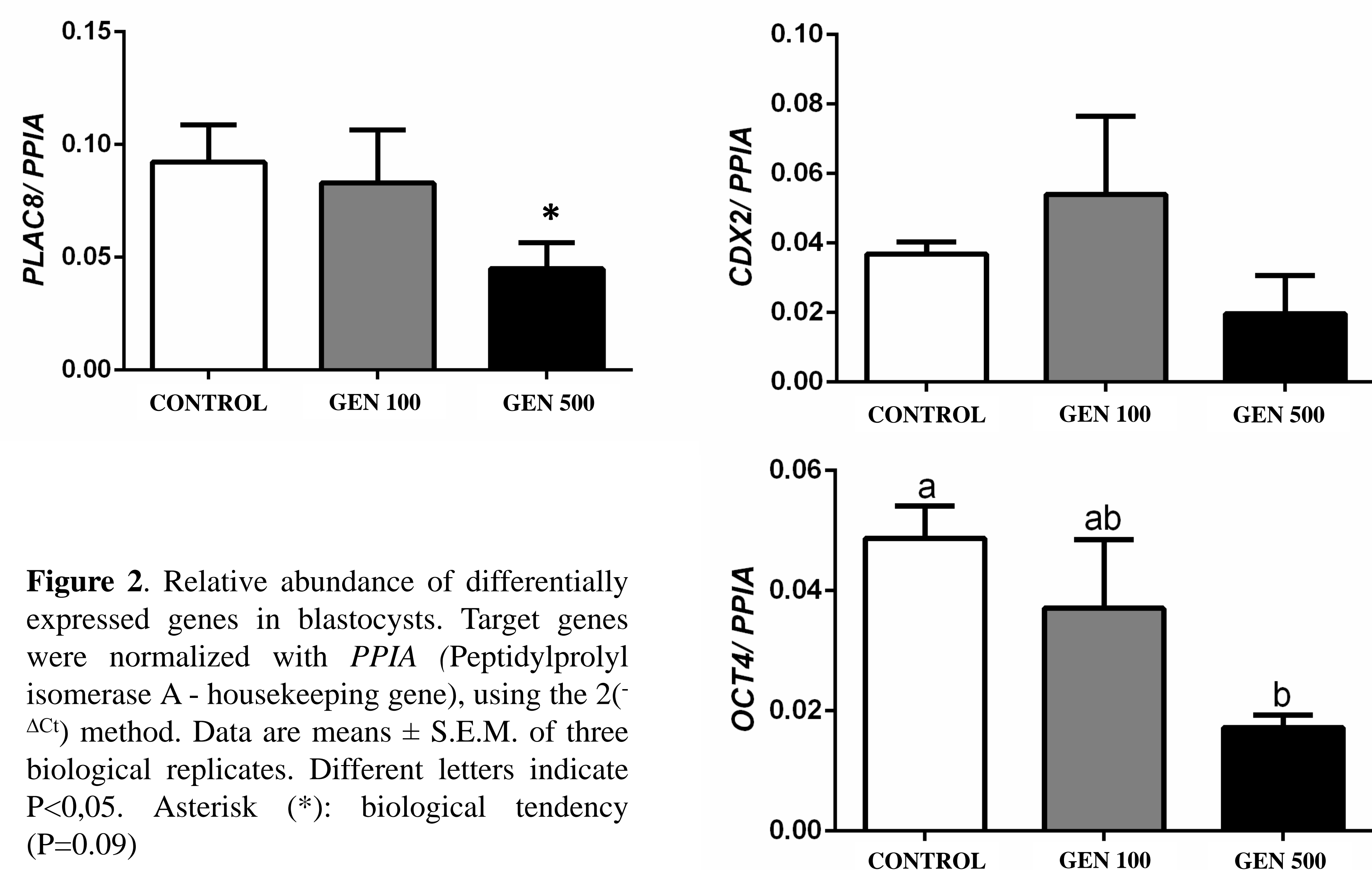
## RESULTS

Regarding *in vitro* embryo yield, we figure out ( $P < 0.0001$ ) that 500 μM of genistein during oocyte maturation decreases blastocyst yield (13.05%) compared to GEN 100 group (46.11%) and control group (46.87%) – Figure 1.

**Figure 1.** Results (%) of blastocyst yield. Data are means  $\pm$  S.E.M. of three biological replicates. Different letters indicate  $P < 0.05$ .



The genes related to embryo quality observed were *OCT4* (Octamer-binding transcription factor 4), *PLAC8* (Placenta associated 8), and *CDX2* (Caudal type homeobox 2); normalized with *PPIA* (Peptidylprolyl isomerase A - housekeeping gene) – Figure 2.



**Figure 2.** Relative abundance of differentially expressed genes in blastocysts. Target genes were normalized with *PPIA* (Peptidylprolyl isomerase A - housekeeping gene), using the  $2^{-\Delta Ct}$  method. Data are means  $\pm$  S.E.M. of three biological replicates. Different letters indicate  $P < 0.05$ . Asterisk (\*): biological tendency ( $P = 0.09$ ).

## CONCLUSION

Taken together, we concluded that addition of 500 μM of genistein during COCs maturation impairs *in vitro* embryo production reducing the blastocyst yield. Furthermore *OCT4* gene related to embryo quality was reduced its expression in the GEN 500 compared to control group.

We analyzed the effect of oocyte exposure to genistein using ANOVA. Means were compared by orthogonal contrast and we considered significant differences when  $P < 0.05$  and biological tendency when  $0.051 > P > 0.10$ . Data were demonstrated by mean  $\pm$  S.E.M.