

OXIDATIVE STRESS IN BOVINE OOCYTES IN THE PRESENCE OF MELATONIN AND/OR GONADOTROPINS

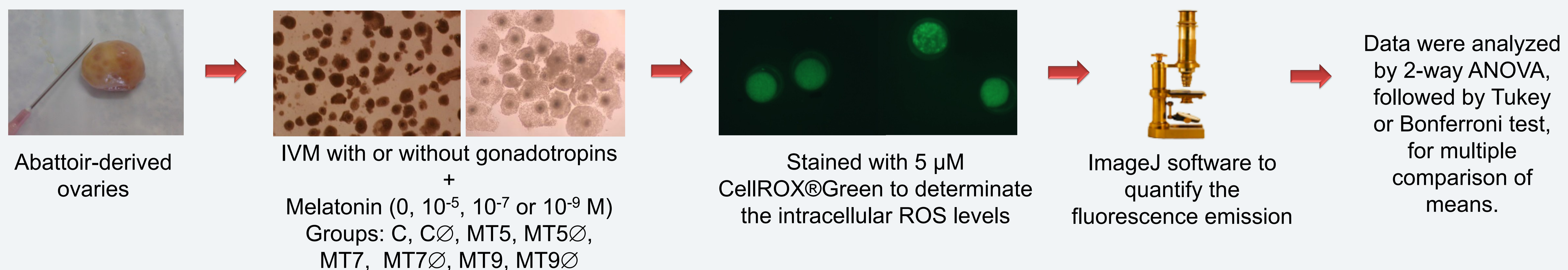
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INTRODUCTION

The antioxidant action of melatonin makes possible to reduce reactive oxygen species (ROS), which are produced by oocytes, embryos and cumulus cells during normal metabolism. However, when there is an imbalance between pro-oxidant agents and antioxidant agents, a condition called oxidative stress sets in, which can lead to blockage in development. As melatonin seems to have the ability to reduce the intracellular amount of ROS and appears to be a substitute for gonadotropins in promoting oocyte maturation, the objective of this work is to evaluate the effect of melatonin supplementation in the presence or absence of gonadotropins under oxidative stress in in vitro matured bovine oocytes.

MATERIAL AND METHODS



RESULTS AND DISCUSSION

There was no significant interaction ($P=0.548$) of melatonin and gonadotropins in the amount of ROS in oocytes, therefore, the results are presented considering the isolated effects (Fig. 1). Regardless of gonadotropin supplementation, a reduction ($P<0.05$) of ROS was observed in oocytes treated with 10⁻⁹ M melatonin (25.89 ± 0.94 and 31.54 ± 1.77 - MT9Ø and MT9 groups) compared to oocytes that did not receive melatonin supplementation (29.62 ± 1.31 and 34.97 ± 1.32 - CØ and C groups). Regarding the effect of gonadotropin, a greater ($P<0.05$) accumulation of ROS was observed in the groups with the presence of gonadotropins supplemented with 0 (CØ and C groups), 10⁻⁷ (28.59 ± 1.31 and 35.12 ± 1.36 - MT7Ø and MT7 groups) and 10⁻⁹ M (MT9Ø and MT9 groups) melatonin and no differences ($P>0.05$) were found in the group supplemented with 10⁻⁵ M melatonin (29.35 ± 1.34 and 29.06 ± 1.14 - MT5Ø and MT5 groups).

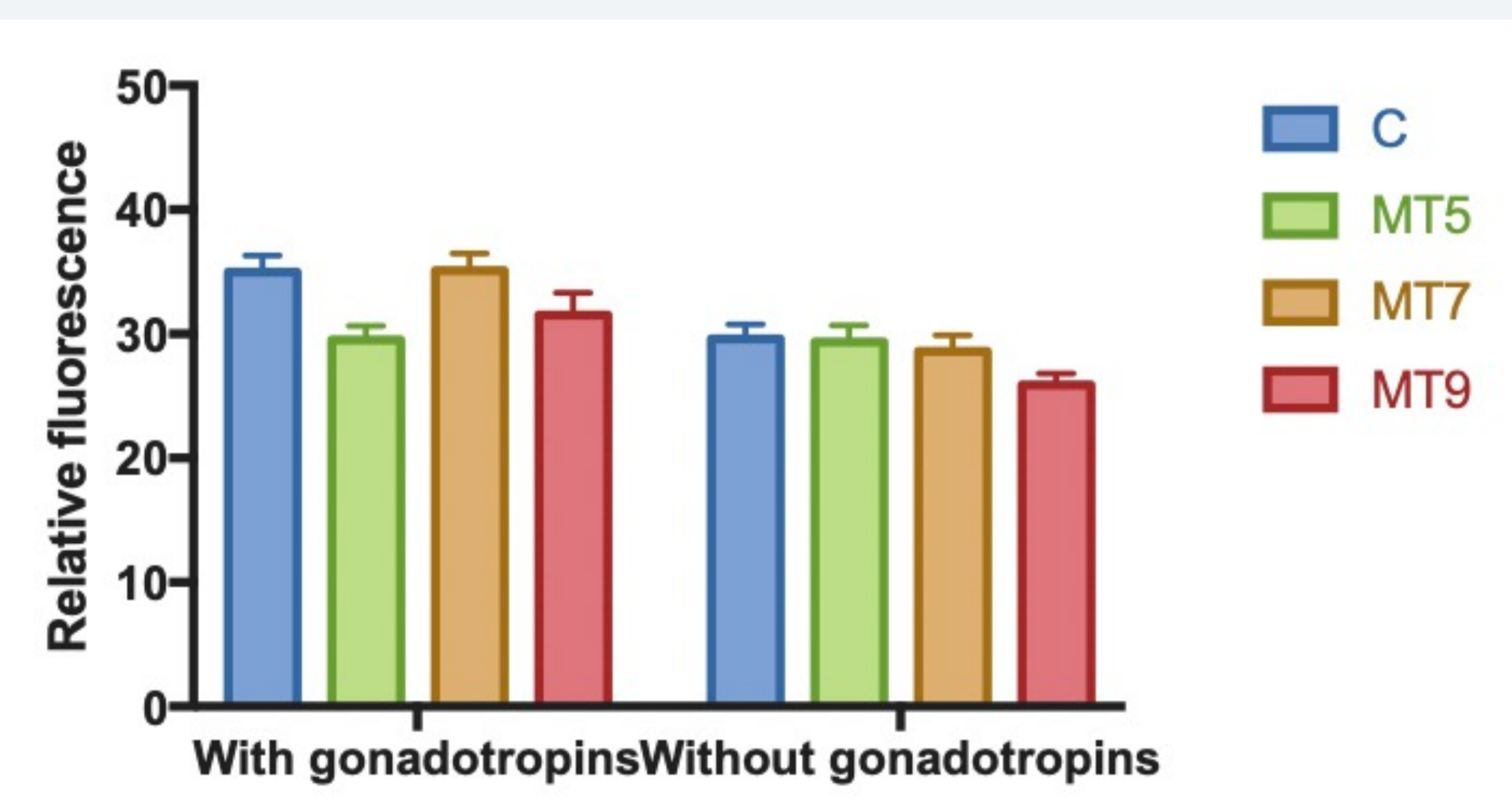


Figure 1. ROS levels of IVM bovine oocytes treated with melatonin, with or without gonadotropins.

CONCLUSION

Although no interaction was observed between the effect of melatonin and gonadotropins on the amount of ROS in bovine oocytes, further studies are needed in order to elucidate these mechanisms and identify the combination of factors that result in less oxidative stress, which should contribute to an increase in embryo production due to better oocyte quality.

ACKNOWLEDGMENTS

