

# INFLUENCE OF HEAT STRESS ON *IN VITRO* OOCYTE AND EMBRYO PRODUCTION IN HIGH-YIELDING HOLSTEIN COWS

F.P. Berling<sup>1</sup>, F.C. Castro<sup>2</sup>, A.C.S. Oliveira<sup>3</sup>

<sup>1,3</sup> Department of Veterinary Medicine, Universidade Regional de Blumenau – FURB

<sup>2</sup> Laboratory Koe Bio Embryo *in vitro* fertilization

## INTRODUCTION

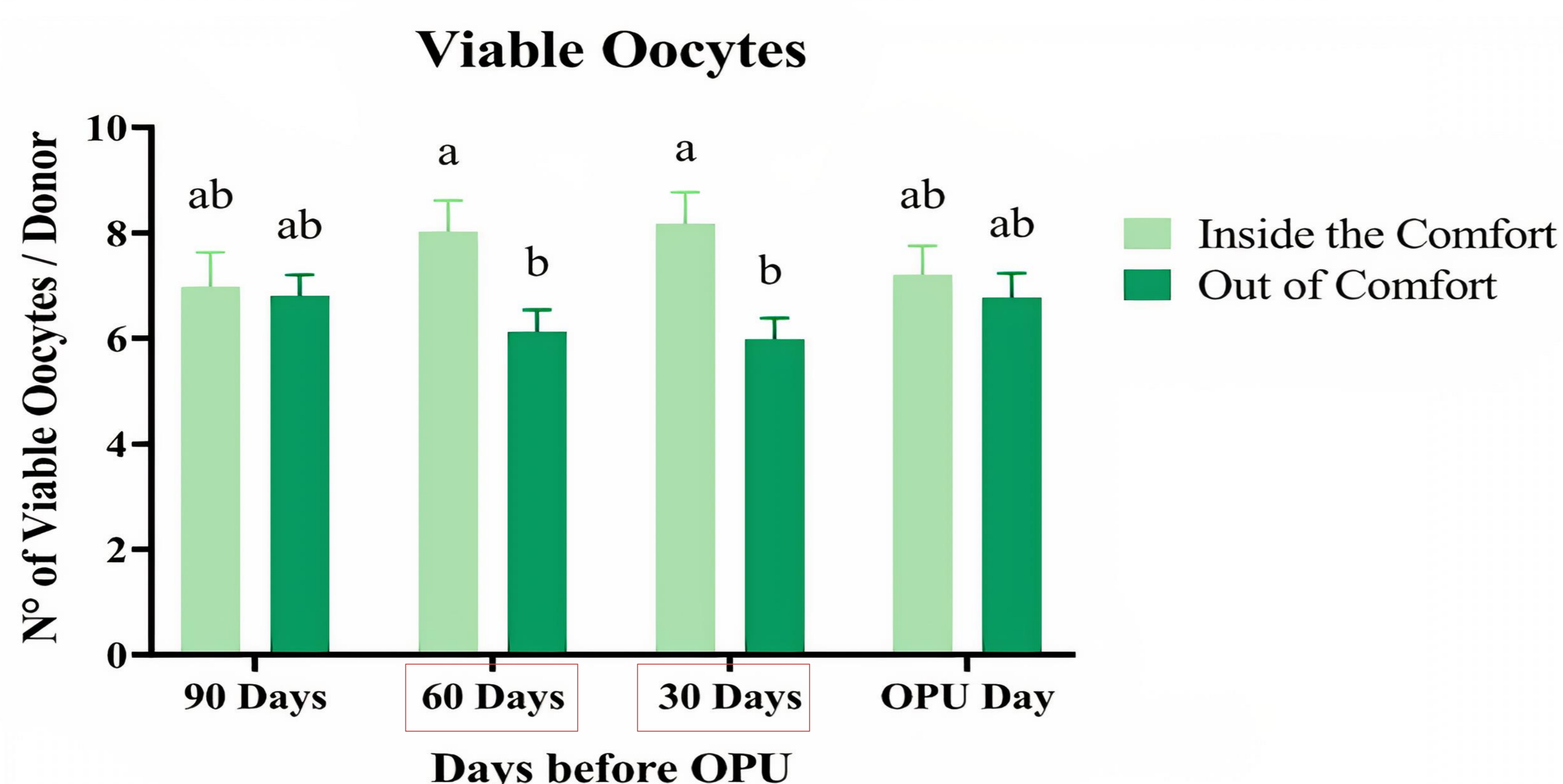
Genetic improvement, promoted by introduction of biotechnologies such as *in vitro* embryo production, has been the key point for increasing productivity in dairy farming by maximizing the reproductive potential of animals with high zootechnical value. However, high production Dutch matrices, when subjected to hyperthermic conditions, show a decrease in *in vitro* embryo production. Therefore, this study aimed to evaluate the influence of temperature on oocyte quality and *in vitro* embryo production in high-yielding Holstein females, which were subjected to heat stress on the day of follicular aspiration (OPU), 30, 60 and 90 days before the OPU.

## METHODS

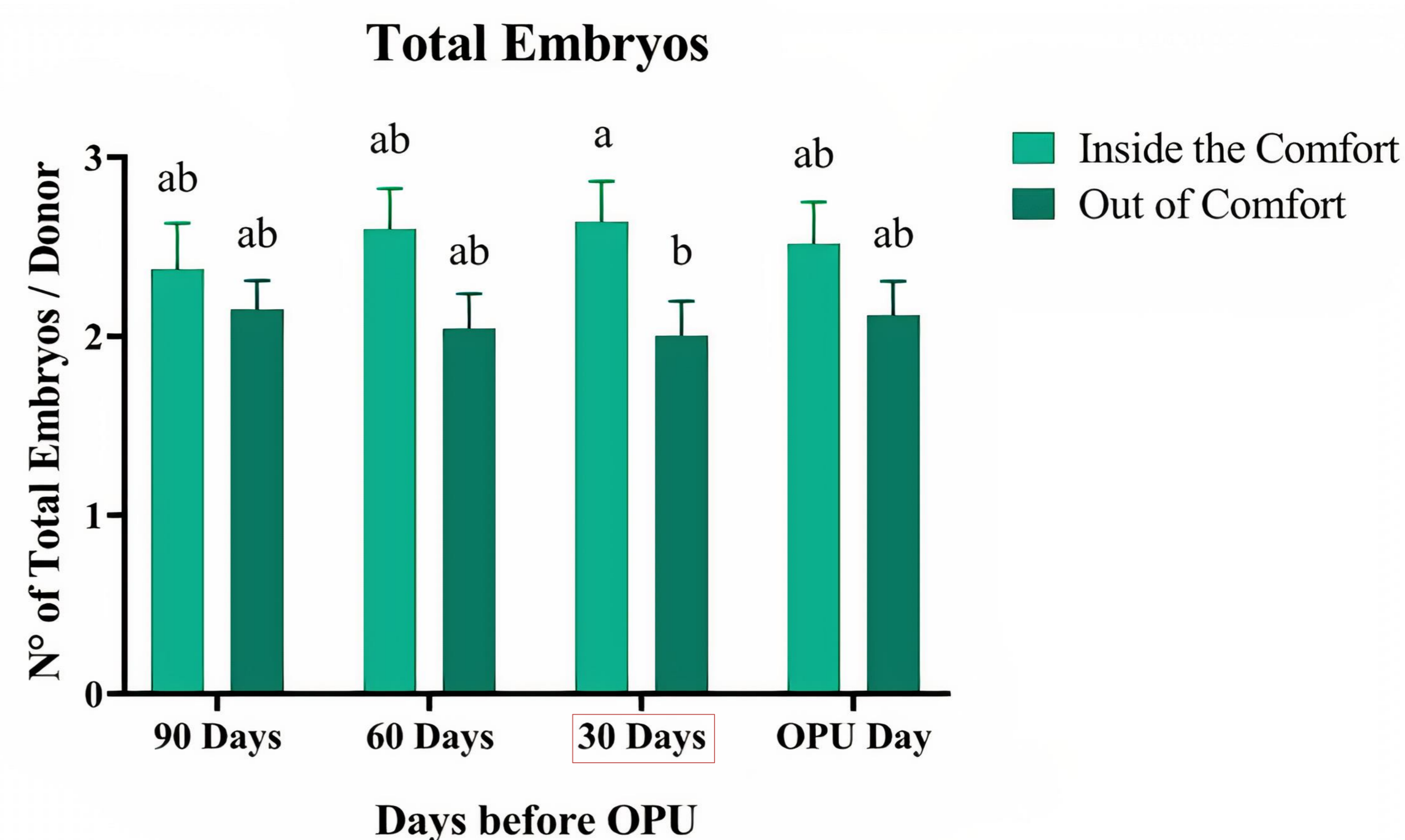
- Classification of matrices in comfort (TC) and thermal stress (HS) group;
- From the average temperature on day 0 and the previous 30, 60 and 90 days;
- TC: Temperatures between 4 and 15°C;
- HS: Temperatures above 15°C;
- Statistical analysis: Anova Two Way and T Student Tests.

## RESULTS

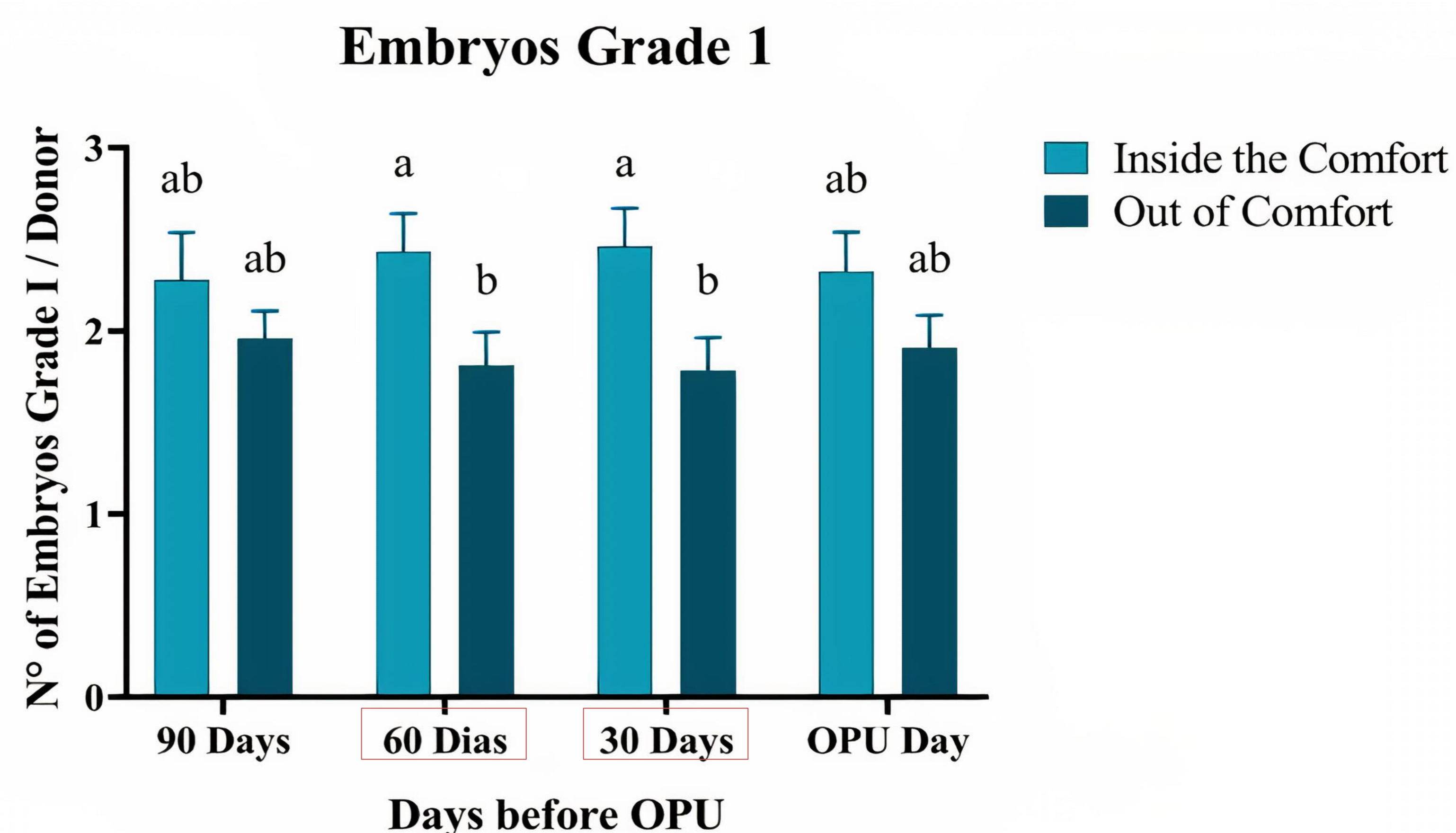
**Graphic 1:** Number of viable oocytes produced by the comfort and heat stress groups on the day of OPU and in the 30, 60 and 90 days prior to the procedure.



**Graphic 2:** Number of total embryos produced by the groups in comfort and heat stress on the day of OPU and in the 30, 60 and 90 days prior to the procedure.



**Graphic 3:** Number of Grade 1 embryos produced by the groups in comfort and heat stress on the day of OPU and in the 30, 60 and 90 days prior to the procedure.



## CONCLUSION

In summary, heat stress had a negative impact when it occurred 30 or 60 days before follicular aspiration. Furthermore, 30 days seems to be the period of greatest susceptibility and that causes the greatest deleterious effects on oocyte viability and *in vitro* embryo production.