

In vitro culture of bovine embryos with C-type natriuretic peptide change their cryotolerance?

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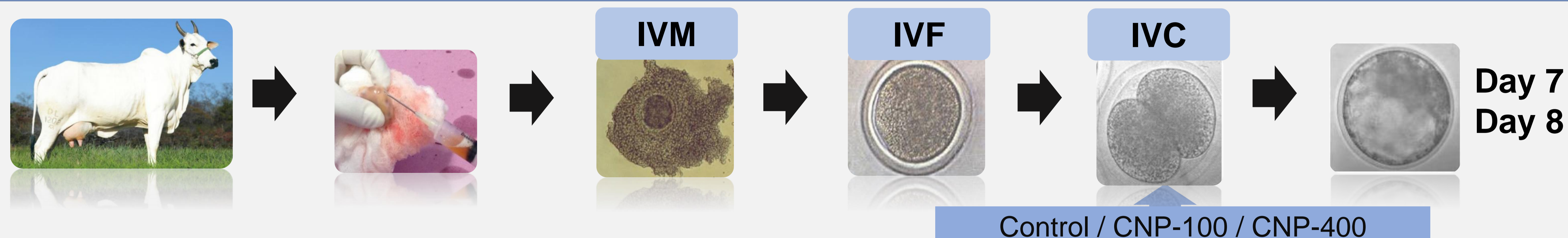
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Introduction

This study aimed to evaluate the effect of two increasing concentrations of C-type natriuretic peptide (CNP; groups Control, CNP-100 and CNP-400, respectively for 0, 100 and 400 nM CNP) from the first day (D1) of *in vitro* culture (IVC) of bovine embryos (*Bos t. indicus*) with 20% of oxygen tension until D7/8. It was evaluated the blastocyst rate and the intracytoplasmic lipid content of embryonic cells, by Sudan Black B analysis.

Material and Methods



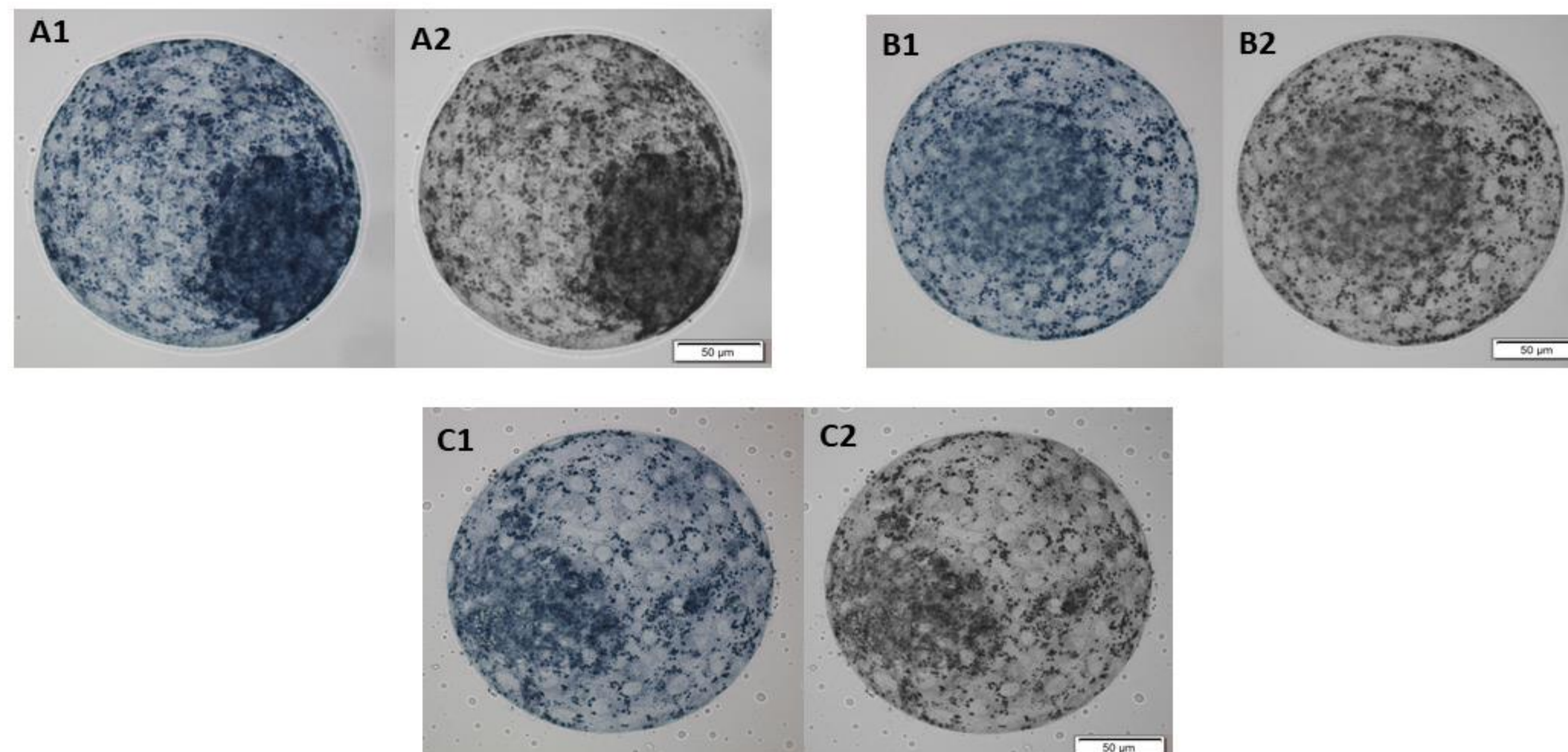
Results

- On Day 7, there was no difference among treatments regarding blastocyst rate.

Treatment	Presumptive zygotes (N)	Blastocyst (N and % mean \pm SEM)
Control	979	332 (34.1 \pm 2.11)
N-100	1043	351 (33.6 \pm 1.40)
N-400	1026	331 (32.6 \pm 1.14)
P-value		0.779

- On Days 7 and 8, the Group CNP-400 had the lowest intracytoplasmic lipid content when compared to the Control (P=0.007). However, CNP-100 had an intermediate lipid content compared to CNP-400 and the Control groups.

Treatment	Analyzed blastocysts	Gray intensity ($\times 10^{-6}$)
Control	87	2.341 ^a
CNP-100	68	2.219 ^{ac}
CNP-400	66	2.184 ^{bc}
P-value		0.0123



Illustrative light microscopy images of *in vitro* produced bovine embryos growing in culture supplemented with CNP. (A) Bovine embryo without CNP supplementation (control); (B) Bovine embryo submitted to supplementation of 100 nM of CNP; (C) Bovine embryo submitted to supplementation of 400 nM of CNP. (1) Images captured by light microscopy; (2) Images converted to gray scale using Image J 1.41 Software. Original magnification x 500.

Conclusion

The results suggest, that the use of CNP in IVC can reduce the lipid content of bovine embryos, with the concentration of 400 nM being the most efficient. Nevertheless, further studies are needed to investigate the mechanism by which CNP interacts with lipid metabolism and whether there was a change in the profile of these intracytoplasmic lipid droplets and/or in the cell membrane.

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