ABSTRACT

After fertilization of an oocyte, the occurrence of calcium oscillations becomes imperative for successful egg activation. These oscillations in calcium levels are mediated by ion channels situated in the plasma membrane in all mammals. Among these ion channels, the Transient Receptor Potential Melastatin (TRPM) family, particularly TRPM7, holds significant interest for this study. The TRPM7 protein is bifunctional as it acts as both an ion channel and a serine/threonine kinase. In the context of the mouse model, a TRPM7 knockout leads to embryonic lethality. To investigate the effects of TRPM7 knockout in oocytes, conditional knockout mice are used. Research indicates that mice with conditional knockout of TRPM7 exhibit subfertility, proving the essential role of TRPM7 in mouse fertility. This study aims to discern the expression levels and localization of TRPM7 in bovine oocytes, cumulus cells, and sperm. This is important as understanding these calcium channels can help us figure out ways to improve ART in the cattle industry. My results showed that TRPM7 is indeed present in bovine cells, however, further research is needed to expand on this finding.

METHODS

1) Isolate RNA
2) Transform RNA to cDNA
3) Analysis
   qPCR and mathematical analysis shows relative mRNA expression of target protein
   (TRPM7)
4) Primary and Secondary Antibody
   marks target protein with fluorescent tag
5) Western Blot extraction protocol was being analyzed.

RESULTS

TRPM7 expression and localization of bovine oocytes, cumulus cells, and sperm

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