Data in Brief 8 (2016) 1215–1220

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data on the concentrations of etoposide, PSC833, BAPTA-AM, and cycloheximide that do not compromise the vitality of mature mouse oocytes, parthenogenetically activated and fertilized embryos

Jacinta H. Martin*, Elizabeth G. Bromfield, R. John Aitken, Tessa Lord, Brett Nixon

Priority Research Centre for Reproductive Science, Discipline of Biological Sciences and Hunter Medical Research Institute, University of Newcastle, Callaghan, NSW 2308, Australia

ARTICLE INFO

Article history:
Received 5 July 2016
Received in revised form
21 July 2016
Accepted 22 July 2016
Available online 30 July 2016

Keywords:
Oocytes
Parthenote
Embryo
Vitality
Etoposide
PSC833
BAPTA-AM
Cyloheximide

ABSTRACT

These data document the vitality of mature mouse oocytes (Metaphase II (MII)) and early stage embryos (zygotes) following exposure to the genotoxic chemotherapeutic agent, etoposide, in combination with PSC833, a selective inhibitor of permeability glycoprotein. They also illustrate the vitality of parthenogenetically activated and fertilized embryos following incubation with the calcium chelator BAPTA-AM (1,2-Bis(2-aminophenoxy)ethane- N,N,N′,N′-tetraacetic acid tetrakis (acetoxymethyl ester)), cycloheximide (an antibiotic that is capable of inhibiting protein synthesis), and hydrogen peroxide (a potent reactive oxygen species). Finally, they present evidence that permeability glycoprotein is not represented in the proteome of mouse spermatozoa. Our interpretation and discussion of these data feature in the article "Identification of a key role for permeability glycoprotein in enhancing the cellular defense mechanisms of fertilized oocytes" (Martin et al., in press) [1].

DOI of original article: http://dx.doi.org/10.1016/j.ydbio.2016.06.035
* Corresponding author.
E-mail address: jacinta.martin@newcastle.edu.au (J.H. Martin).

http://dx.doi.org/10.1016/j.dib.2016.07.046

Specifications Table

Subject area	*Biology,*
More specific subject area	*Oocyte/zygote protective mechanisms against double strand break DNA damage*
Type of data	*Graph and figures*
How data was acquired	*Immunocytochemistry and immunoblotting*
Data format	*Analyzed*
Experimental factors	*Mouse oocytes and zygotes were treated with etoposide (100 μg/ml) for 15 min when appropriate. Those used in the examination of permeability glycoprotein (PGP) efflux activity were pretreated with either the PGP inhibitor PSC833 for 15 min (5 μM) or with BAPTA-AM (5 μM)), or cycloheximide (20 μg/ml) for 4 h during the allotted activation/fertilization period.*
Experimental features	*Mouse oocytes and spermatozoa were harvested and zygotes or parthenotes produced via IVF or strontium chloride chemical activation, respectively. Oocytes were treated with etoposide and PSC833 in combination (a selective inhibitor of PGP), BAPTA-AM or cycloheximide. The cytotoxicity of these drugs was evaluated by labeling of the cells with a standard vitality reagent for 15 min at 37 °C.*
Data source location	*N/A*
Data accessibility	*All relevant data are presented within this article*

Value of the data

- These data provide valuable insight into the maintenance of mature mouse oocyte and zygote vitality following genotoxic insult with etoposide (100 μg/ml); a chemotherapeutic agent that elicits a potent inhibition of topoisomerase II α action.
- Similarly, these data indicate that selective pharmacological inhibition of permeability glycoprotein (PGP) with PSC833 (5 μM), as well as incubation of oocytes in BAPTA-AM (5 μM) and cycloheximide (20 μg/ml) for periods of up to 4 h following insemination with spermatozoa or activation with strontium, does not adversely affect oocyte or embryo vitality.
- This information is of use to the scientific community as it establishes concentrations of various pharmacological reagents that can be utilized without compromising oocyte and embryo viability.
- Finally, these data provide evidence that mouse spermatozoa do not harbor PGP within their proteome, thus discounting the possibility of a paternal contribution to elevated levels of PGP found in the zygote.

1. Data

The files included in this article comprise vitality profiles of mouse MII stage oocytes, chemically activated and fertilized zygotes following exposure to etoposide (100 μg/ml) in combination with PSC833 (5 μM) (Fig. 1), cycloheximide (20 μg/ml), BAPTA-AM (5 μM) or hydrogen peroxide (1 mM) (Fig. 3). This latter treatment was included as a positive control. Immunoblots of mouse sperm lysates with of anti-PGP antibodies are also included in this article (Fig. 2).

2. Experimental design, materials and methods

2.1. Reagents

Reagents were purchased from Sigma Aldrich (St Louis, MO, USA) unless otherwise stated. Anti-permeability glycoprotein (PGP; ab170904) antibody used for immunoblotting was procured from Abcam (Cambridge, England, UK).