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Data Article

Data on the construction of a recombinant HEK293 cell line overexpressing hERG potassium channel and examining the presence of hERG mRNA and protein expression

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ABSTRACT

The data presented in this article are related to the research article entitled "The effects of deoxyelephantopin on the cardiac delayed rectifier potassium channel current (I_{Kr}) and human ether-a-go-go-related gene (hERG) expression" (Y.F. Teah, M.A. Abduraman, A. Amanah, M.I. Adenan, S.F. Sulaiman, M.L. Tan) [1], which the possible hERG blocking properties of deoxyelephantopin were investigated. This article describes the construction of human embryonic kidney 293 (HEK293) cells overexpressing HERG potassium channel and verification of the presence of hERG mRNA and protein expression in this recombinant cell line.

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Specifications Table

Subject area	*Pharmacology and Toxicology*
More specific subject area	*Stable transfection, RT-qPCR and Western Blot analysis*
Type of data	*Figures, text file*
How data was acquired	*CFX96™ Real-Time PCR Detection System (Bio-Rad Laboratories, USA), ChemiDoc™ XRS Imaging System (Bio-Rad Laboratories, USA)*
Data format	*Analyzed*
Experimental factors	*Transfected HEK293 cells with pCMV6-Neo-hERG plasmid and non-transfected HEK293 cells were analyzed using RT-qPCR and Western Blot analysis*
Experimental features	*The presence of hERG mRNA and protein expression in HEK 293-hERG cell line were determined* *The absence of hERG mRNA and protein expression in non-transfected HEK293 cells were observed*
Data source location	*Universiti Sains Malaysia, Pulau Pinang, Malaysia* *Malaysian Institute of Pharmaceuticals and Nutraceutical, NIBM, Pulau Pinang, Malaysia*
Data accessibility	*Data is accessible with this article*

Value of the data

- The data is beneficial to researchers who are interested in the pharmacology properties of deoxyelephantopin and *Elephantopus scaber* Linn
- This data set is beneficial to researchers who want to construct a heterologous mammalian system expressing hERG potassium channel
- The data is helpful to determine the mRNA and protein expression of hERG in cell lines after stable transfection
- The data is helpful to ensure that the recombinant cell line (HEK293-hERG) is expressing hERG at both transcriptional and translational level.

1. Data

Fig. 1 shows the plasmid map of pCMV6-Neo-hERG (Origene, USA). Fig. 2 shows the restriction enzyme digestion products of the plasmid. Fig. 3 shows the sequence alignment and comparison between the sequences of the cDNA insert against the hERG sequence [NM 000238.3 homo sapiens potassium voltage-gated channel, subfamily H (eag-related), member 2 (KCNH2), transcript variant 1, mRNA]. Fig. 4 shows the melt curves displaying the melting temperature (T_m) as single peaks. Fig. 5 shows the standard curve plots for amplification efficiency for hERG and β-actin. Fig. 6 shows significant hERG mRNA expressions in different batches of HEK293-hERG cells. Fig. 7 shows a representative image of the hERG channel protein expression in hERG-transfected and non-transfected HEK293 cells [1].

2. Experimental design, materials and methods

2.1. Cell culture and plasmid amplification

HEK293 cell line was purchased from American Type Culture Collection (ATCC, USA). Cells were maintained in Dulbecco's Modified Eagle medium (DMEM) supplemented with 10% (v/v) fetal bovine serum (FBS), 100 U/ml penicillin, 100 μg/ml of streptomycin, 1% (v/v) sodium pyruvate, 1% (v/v)