Product description

MCF7/AnaR-1 is a cell culture model mimicking acquired resistance of aromatase inhibitors (AIs) - an anti-cancer therapy. This breast cancer cell line was established from MCF7/S0.5 cells, which originates from MCF7 cells. The cellular classification is epithelial, and their shape is polygonal. The MCF7/AnaR-1 cell line is resistant to the third generation AI - anastrozole (Arimidex). MCF/AnaR-1 is oestrogen receptor positive. Third generation AIs have proven to be effective treatment for oestrogen receptor positive (ER+) breast cancer and therefore are recommended as first line endocrine therapy for postmenopausal ER+ breast cancer patients. Previous applications of this cell line include western blot analysis of protein expression. Since molecular mechanisms of AI resistance are largely undisclosed, the development of cell lines resistant to the non-steroidal AI anastrozole allows the study of the molecular basis for AI resistance to find new targets for treatment.

Name: MCF7/AnaR-1 Cell Line

Organism: Human

Disease: Cancer

Cancer detailed: Breast cancer

Tissue: Breast

Parent cell line: MCF7/S0.5

Growth properties: Adherent

Model: Tumour line

Production details: Anastrozole-resistant cell lines were established from MCF7/S0.5 cells grown in medium with 10% NCS and 10-7 M testosterone. A culture of MCF7/S0.5 cells were treated with 10-7 M anastrozole for one week, trypsinised and seeded in serial dilutions in 24-well plates. Single colonies were transferred to new wells and gradually expanded in medium with anastrozole. After 2-3 months, the isolated colonies gave rise to anastrozole-resistant cell lines, which could be grown in anastrozole-containing medium with a weekly split ratio of 1:25. This cell line was authenticated in January 2014 by DNA profiling using short tandem repeat loci and found to be matching the genetic profile reported for the MCF7 cell line.

Cellosaurus ID: CVCL_5A09

Biosafety level: 1

Contributor(s)

Inventor: Anne Lykkesfeldt
Institute: Danish Cancer Society

Properties

Product format: Frozen

Unpacking and storage:

1. Check all containers for leakage or breakage.

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2. Remove the frozen cells from the dry ice packaging and immediately place the cells at a temperature below -130°C, preferably in liquid nitrogen vapor, until ready for use.

Recommended medium: Phenol-red-free DMEM/F12 medium supplemented with 10% newborn calf serum (NCS), 2.5 mM Glutamax, 6 ng/ ml insulin, 0.1 uM testosterone and 0.1 uM anastrozole.

Subculture routine: Split sub-confluent cultures at 70-80% confluency. Subculture cells using 0.05% trypsin/EDTA solution or TrypLE Express™(1X), without phenol red, and wash with phosphate-buffered saline (PBS). Pellet cells by centrifugation and re-suspend in growth medium. Initiate the culture at a dilution of approximately 1:3 to 1:6 i.e. seeding at 2-4 x 10^4 cells per cm^2. Recommend media changes every 2-3 days.

Culture conditions: 37.0°C ± 1.0°C humidified incubator with 5.0% CO_2.

Handling instructions

1. Please ensure that vials are frozen when received, and store at **<-130 °C long term**. When removing frozen cells from storage, it is important to minimize exposure to room temperature (15 - 25°C). If not proceeding directly to thawing, place the cells on dry ice or in a liquid nitrogen container.
2. **Do not thaw at room temperature.** To thaw, swirl the vial quickly in a 37 °C water bath with O-ring and cap above the water to avoid contamination. Remove from the water bath with a small ice pellet remaining (this should not take more than 2 minutes) and wipe the exterior with 70% ethanol or isopropanol before transferring to a biosafety cabinet. Further steps should be conducted under aseptic conditions.
3. We strongly recommend that the volume of cell suspension is measured, and a 20 uL aliquot be set aside at this point for a viable cell count using trypan blue or similar dye.
4. In a laminar flow hood, use a 1 or 2 mL pipette to transfer the cells to a sterile 15 mL conical tube. Be careful not to introduce any bubbles during the transfer process.
5. Using a 10 mL pipette, slowly add **dropwise** 9 mL of prewarmed complete medium to the 15 mL conical tube.
6. Gently mix the cell suspension by slowly pipetting up and down twice. Be careful not to introduce any bubbles.
7. Centrifuge the tube at **300 x g for 2-3 minutes** to pellet the cells. Decant as much of the supernatant as possible.
8. Resuspend the cells in 10-15 mL of pre-warmed to complete medium.
9. Transfer the cell mixture to a T75 tissue culture flask and incubate at 37°C in a humidified incubator with 5% CO_2.
10. Subculture following instructions above.

References

- Thewes et al. 2017. Oncogene. 36(29):4124-4134.PMID: 28319069.
- Hole et al. 2015. Breast Cancer Res Treat. 149(3):715-726. PMID: 25667100.
- Hole et al. 2015. Int J Oncol. 46(4):1481-1490. PMID: 25625755.

Material Citation

If use of this material results in a scientific publication, please cite the material in the following manner: MCF7/AnaR-1 Cell line was invented by Anne Lykkesfeldt (CancerTools.org #152551).

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