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Human Adrenal Cortical Cells (HAdCC)

Catalog Number	10HU-245	**Cell Number**	0.5 million cells/vial
Species	*Homo sapiens*	**Storage Temperature**	Liquid Nitrogen

Description

The adrenal cortex makes up the perimeter of the adrenal gland and plays an essential role in regulating homeostasis in the body through the secretion of corticosteroid and androgen hormones[1]. The secreted steroids arise from three zones that form the adrenal gland, which provide the framework of the adrenal cortex. The cells in the cortex stem from the mesoderm and form three concentric zones named the zona glomerulosa, zona fasciculate, and zona reticularis[2]. Studies have shown that there is extensive interaction between the cortical and medulla regions of the adrenal gland, with cortical cells being found within the adrenal medulla and chromaffin cells within the adrenal cortex. The close contact of these two cell types implies intercellular exchange and allows for further studies concerning paracrine signaling between the two adrenal endocrine systems[3]. Human adrenal cortex also harbours a mesenchymal stem cell-like population[4]. Adrenal cortical cells can be used for research of hormonal regulation, steroidogenesis and regenerative therapy in adrenal insufficiency.

iXCells Biotechnologies provides high quality HAdCC, which were isolated from adult normal adrenal cortical tissue. HAdCC were cryopreserved at passage one (P1), with >0.5 million cells in each vial. They are negative for HIV-1, HBV, HCV, mycoplasma, bacteria, yeast, and fungi and can further expand for no more than 3 passages in Adrenal Cortical Cell Growth Medium (Cat# MD-0117) under the condition suggested by iXCells Biotechnologies.

Product Details

Tissue	Human Adrenal Cortex tissue
Package Size	0.5 million cells/vial
Passage Number	P1
Shipped	Cryopreserved
Storage	Liquid nitrogen
Growth Properties	Adherent
Media	Adrenal Cortical Cell Growth Medium (Cat# MD-0117)

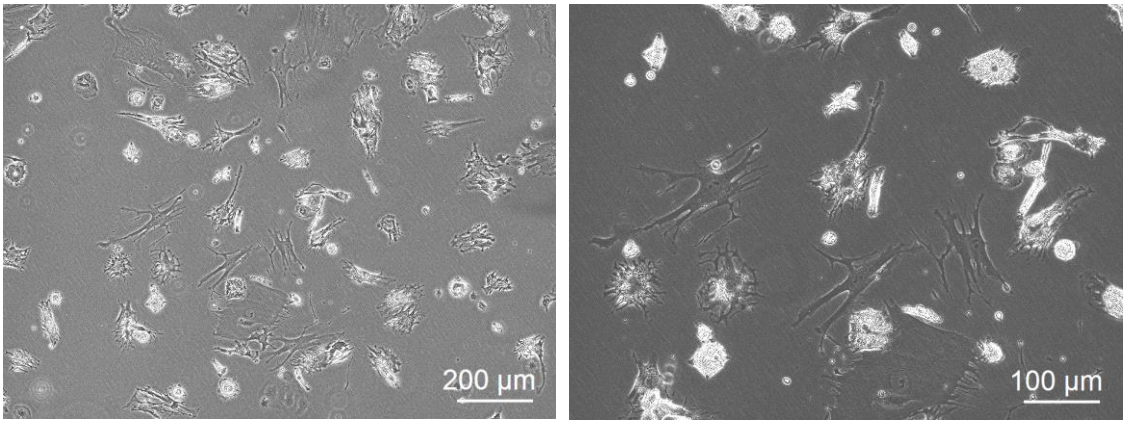

Figure 1. Phase contrast images of HAdCC. The primary cells predominantly comprised adrenocortical cells with polygonal appearance and light-refractive lipid core. Some adrenal cortical fibroblast-like cells were also noticed in early passages. The images were taken at magnification of 10× and 20×.

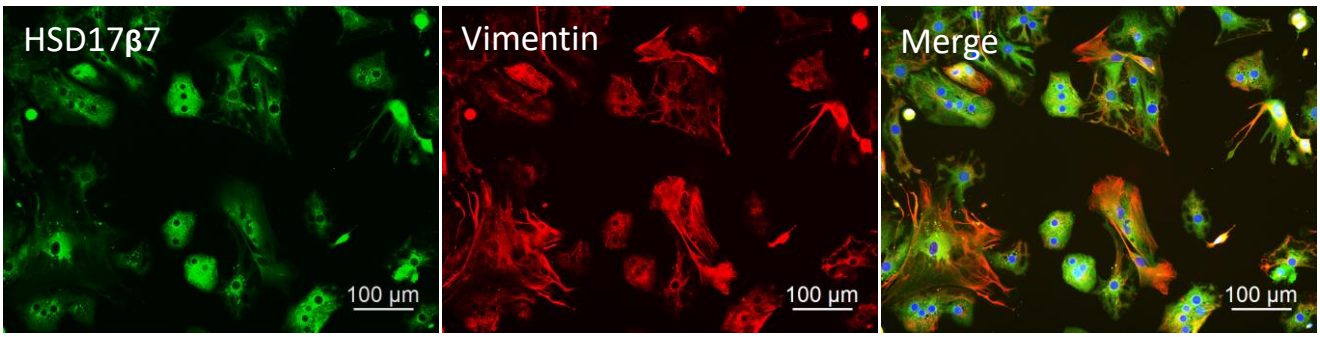

Figure 2. Fluorescent immunostaining images of HAdCC. Immunocytochemistry staining was performed using antibodies against 17 beta hydroxysteroid dehydrogenase 7 (HSD17β7) and vimentin. The cells immunoreactive with HSD17β7 are steroid hormone producing cells. Nuclei were counterstained with DAPI.

Protocols

Thawing of Frozen Cells

1. (Optional) Coating of Culture Vessels: Dilute Collagen Type I solution from rat tail (Sigma-Aldrich, C3867) with 1× PBS to prepare final concentration of 30µg/mL. For example, 1-2 mL of the above solution for one well of a 6-well plate, and 8-10 mL for T75 flask. Incubate at 37° C for one hour or 4° C overnight. Aspire the remaining solution and use 1× PBS to rinse the dishes/plates three times. Use the coated dishes/plated immediately or store them at 2-8° C within 1 week.
2. Upon receipt of the frozen cells, it is recommended to thaw the cells and initiate the culture immediately in order to retain the highest cell viability.
3. To thaw the cells, put the vial in 37°C water bath with gentle agitation for ~1-2 minutes. Keep the cap out of water to minimize the risk of contamination.
4. Pipette the cells into a 15 mL conical tube with 5 mL fresh **Adrenal Cortical Cell Growth Medium** (Cat# MD-0117).
5. Centrifuge at 350*g* for 5 minutes under room temperature.
6. Remove the supernatant and resuspend the cells in desired volume of **Adrenal Cortical Cell Growth Medium**.
7. Culture the cell in T75 flask or the desired culture vessel. Change the medium every other day until cells reach 80-90% confluence. We recommend seeding at 10,000 cells/cm^2.

Safety Precaution: *it is highly recommended that protective gloves and clothing should be used when handling frozen vials.*

Standard Culture Procedure

Primary HAdCC are heterogenous cell population mainly comprised adrenocortical steroid producing cells and fibroblast-like cells. Gradually, the colony-forming fibroblast cells increased in the culture.

1. When cells reach ~70-80% confluence, remove the medium, and wash once with sterile PBS (5 mL/T75 flask).
2. Add ~2.5 mL of 0.05% Trypsin-EDTA to the flask and incubate for ~3 minutes at 37°C. Neutralize the enzyme by adding 2-3 volumes of cell culture medium.
3. Centrifuge at 350*g* for 5 minutes and resuspend the cells in desired volume of medium.
4. Seed in the new culture vessels at 10,000 cells/cm^2. Change the medium every other day until cells reach 70-80% confluence.

Reference

[1] Neelon FA. Adrenal physiology and pharmacology. Urol Clin North Am. 1977 Jun;4(2):179-92.
[2] Pignatti, E. and Flück, CE. Adrenal cortex development and related disorders leading to adrenal insufficiency. Mol. Cell. Endocrinol. 2021 527:111-206.
[3] Schinner S, Bornstein SR. Cortical-chromaffin cell interactions in the adrenal gland. Endocr Pathol. 2005 Summer;16(2):91-8.
[4] Gan EH, Robson W, Murphy P, Pickard R, Pearce S, Oldershaw R. Isolation of a multipotent mesenchymal stem cell-like population from human adrenal cortex. Endocr Connect. 2018 May;7(5):617-629.

Disclaimers