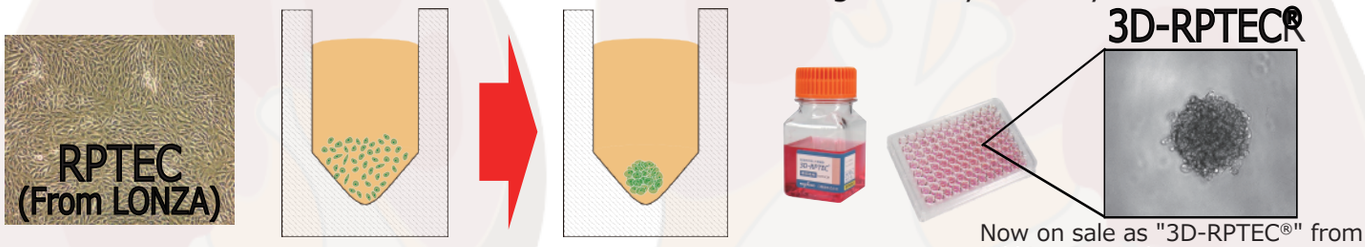
PrimeSurface® 96V plate Application

3D Kidney model for Drug Discovery Research

Animal testing is the main method used in drug discovery, but from the viewpoints of species difference issues and animal welfare, human-derived cell testing is required as an alternative method to animal testing. However, until now there have been no cells that can adequately evaluate human kidney function. Here we present the generation of kidney cell spheroids suitable for drug discovery research using PrimeSurface®.

1. 3D culture

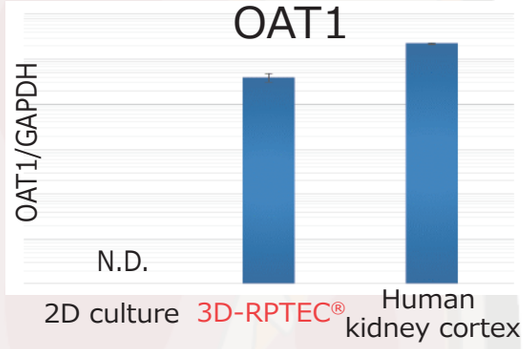
PrimeSurface® 96V plate was used to culture human renal proximal tubular epithelial cells (RPTEC, LONZA).
Spheroids were formed and the culture medium was changed every 2-3 days.

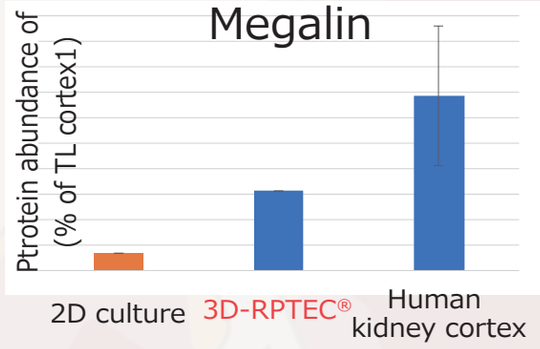


Now on sale as "3D-RPTEC®" from Nikkiso Co., Ltd.

2. Gene/Protein expression

Gene and protein expression analysis of major drug transporters expressed in kidney cells in 2D and 3D cultures.

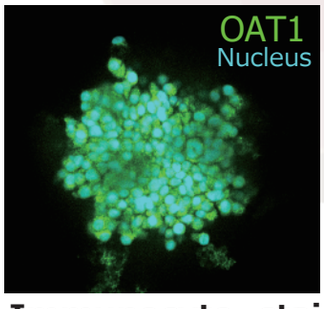


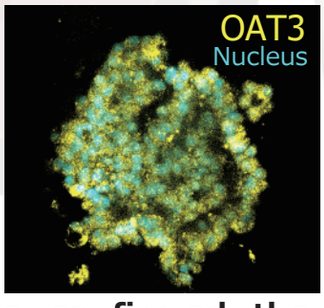


In 3D-RPTEC®, both gene and protein expression of OAT1 (one of the major kidney transporters) and Megalin (responsible for endocytosis in kidney, were markedly improved.

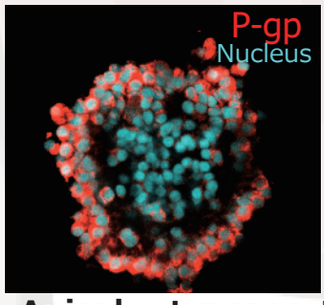
3. Immunocytochemistry

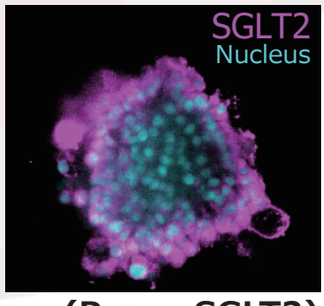
Major drug transporters expressed in the kidney were observed in 3D-RPTEC®.





Immunocyte staining confirmed the expression of major drug transporters in 3D-RPTEC®.





Apical transporters (P-gp、SGLT2) were found to be strongly localized outside of 3D-RPTEC®.

PrimeSurface® 96V plate contributes to the construction of a 3D kidney model that can be used for drug discovery research

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