

SUMILON™ Companion Plate Opens a New Stage in Automation of Cell Culture

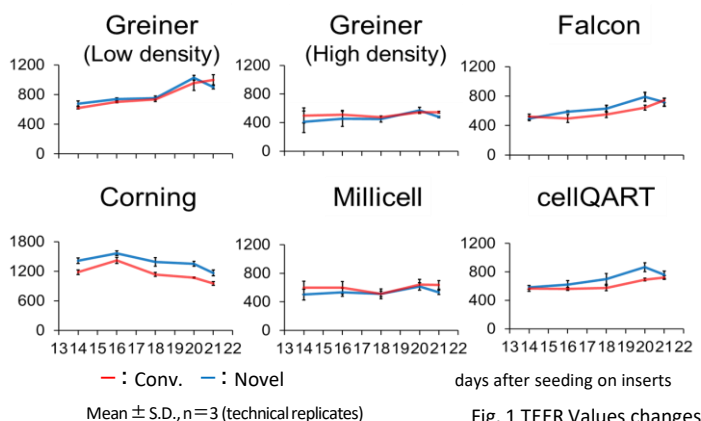
Data provided by Prof. Tamihide Matsunaga, Graduate School of Pharmaceutical Sciences, Department of Clinical Pharmacy, Nagoya City University
Panasonic Production Engineering Co., Ltd.



Development of automated cell culture systems is currently underway with the aim of improving the efficiency and standardization of cell culture. However, when using cell culture inserts, conventional companion plates have limitations in securing the inserts, posing challenges in automating media aspiration and access. The SUMILON Companion Plate ensures insert stability even during operations such as media exchange, making it a promising candidate for use in automated culture systems. With the cooperation of Nagoya City University and Panasonic Production Engineering Co., Ltd., we present the results of cell culture applications and culture quality when the SUMILON Companion Plate is used in automated culture systems.

Features of the SUMILON™ Companion Plate

Inserts from various manufacturers can be fitted, allowing for smoother medium changes compared to conventional methods. Caco-2 cells (1.0×10^5 cells/well) were cultured for 21 days using inserts from 5 manufacturers in both the SUMILON Companion Plate manual method (Novel) and the conventional 24-well plate manual method (Conv.). Trans-epithelial electrical resistance (TEER) values were measured and evaluated; no differences were observed in TEER values between Conv. group and Novel group of the various manufacturers, confirming successful culture using the SUMILON Companion Plate.



Application of Using SUMILON™ Companion Plates in Automated Cell Culture System

Panasonic Production Engineering Co., Ltd. (PPE) offers an open-system all-in-one model capable of automating the entire cell culture process, including medium exchange, passaging, and differentiation induction. (Fig. 2).

<https://www.ppe-biz.com/all-in-one-automated-cell-culture-system>



Fig. 2 Automated Cell Culture System

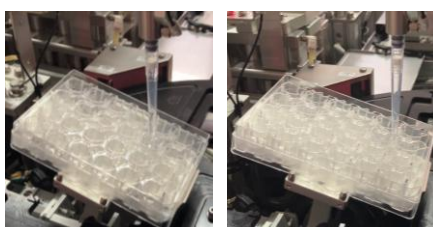


Fig. 3 Culture procedures using automated cell culture system
(Left: Apical side; Right: Basal side)

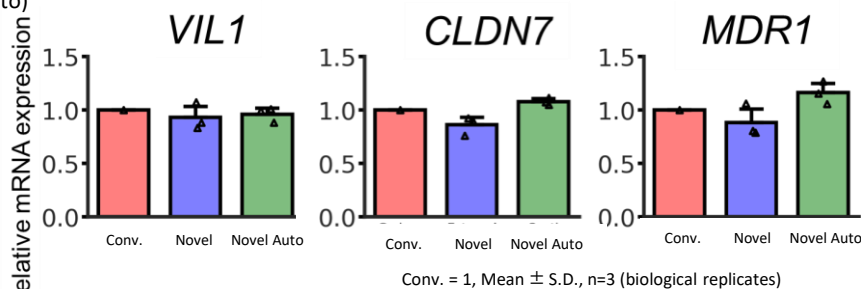
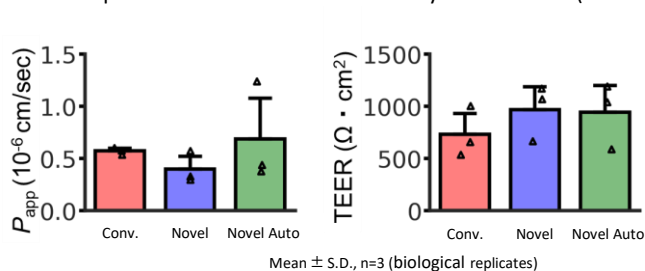
By providing access points on both the apical and basal sides of each well, the system enables automated culture operations such as medium aspiration and dispensing (Fig. 3). SUMILON Companion Plates have been confirmed to be compatible with automated culture systems.

<Method>

Caco-2 cells (1.0×10^5 cells/well) were cultured for 21 days in an automated culture system, and membrane permeability assays using Lucifer Yellow, TEER measurements, and gene expression analyses were performed and compared with those obtained using conventional 24-well plates.

<Results>

*Red bar: Conventional manual 24-well plate method (Conv.), Blue bar: SUMILON Companion Plate manual method (Novel), Green bar: SUMILON Companion Plate automated culture system method (Novel Auto)



SUMILON™ Companion Plates and the automated culture system showed no significant differences in TEER values, P_{app} values, or gene expression compared to conventional methods, demonstrating that the conventional method can be automated.

CONTACTS: s-bio@sumibe.co.jp • www.sumibe.co.jp/english/product/s-bio/ • +81-3-5462-4831
S-BIO Business Division | Sales Department | Sumitomo Bakelite Co., Ltd.
5-8, Higashi-Shinagawa, 2-Chome, Shinagawa-ku, Tokyo 140-0002 Japan