

## Advancing Non-Animal Testing Methods: BRAND® Insert 2in1 Systems for In Vitro Research

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We believe that scientific and regulatory advancement of non-animal methods is only possible through multidisciplinary cooperation. At BRAND GMBH - Our focus on scientific research is to develop new cell and tissue culture technologies & and product innovations to promote non-animal methods, and Research educational programs to further encourage their acceptance by authorities.

A significant contribution to this endeavor is the [BRAND® Insert 2in1 System](#) – an accessible solution designed to fit seamlessly into various culture plates or dishes. Tailored for researchers and scientists with varying levels of experience in utilizing cell culture inserts, these systems are compatible with TEER measurement devices like Endohm Chambers (WPI), chopstick electrodes, and impedance devices.

(Reference of Application Note) : <https://bit.ly/453yIDD>

The primary application of the [BRAND® Insert 2in1](#) System lies in in vitro bioanalytical research, particularly within the realms of ADME (Absorption, Distribution, Metabolism, and Excretion) and DMPK (Drug Metabolism and Pharmacokinetics) studies. Specifically engineered for Caco-2 and MDCK cells, these systems facilitate investigations into molecule absorption across

relevant barriers.

**Caco-2 Cell Line:** For over three decades, the Caco-2 cell line has been a cornerstone for studying drug absorption across the human intestinal mucosa. The cultivation of Caco-2 cells on BRAND inserts enhances their morphological and functional differentiation. Notably, polarized Caco-2 monolayers have proven to be reliable correlates for assessing drug and compound absorption following oral intake. Numerous studies have demonstrated a strong correlation between Caco-2 permeability coefficients and human absorption data, particularly for compounds transported via passive paracellular mechanisms. These cells are seeded meticulously and differentiated over 21 days on insert well plates with permeable membrane (PET/PC) supports, creating apical and basal compartments in multiwell plates that mimic intestinal absorption into the bloodstream.

The [BRAND® 2in1 system](#) utilizing the Caco2 model yields predictive permeability data, whether through passive diffusion or active transport, for hydrophilic to moderately lipophilic molecules. Furthermore, its adaptability for high-throughput screening, in conjunction with the BRAND-LHS system, adds to its versatility.

**MDCK Cell Lines:** Widely employed as an in vitro model for the intestinal epithelium, MDCK cells find their niche within the [BRAND® Insert 2in1 System](#). These cells can be cultured for 12 days on a permeable membrane, boasting clear apical and basolateral polarity and well-defined cell junctions. MDCK cells in this system also exhibit proficiency in transient and stable gene transfection, making them particularly suitable for overexpressing uptake and efflux drug transporters. Notably, the ATP-binding Cassette (ABC) superfamily members MDR1 and BCRP fall within this category.

The recent amendment to India's New Drugs and Clinical Trial Rules (2023) underscores the changing landscape of research methodologies. This amendment, advocating for the replacement of animal testing with non-animal and human-relevant methods, aligns seamlessly with the philosophy of organizations like BRAND®. This shift towards alternatives, including 3D organoids, organs-on-chip, and advanced computational techniques, marks a pivotal moment in the pursuit of humane and ethical research practices.

BRAND's product research team continues to address the ever-developing needs of laboratories for new cell and tissue culture technologies that have been generated to follow the global legislation that restricts animal experiments to a minimum. We particularly focus on active participation in scientific congresses to expertise throughout the research community. BRAND® is at the forefront of the battle against animal testing, committed to the development of novel non-animal methods and safety evaluation tools that hold promise on a global scale.

References: Reconstruction of full-thickness skin using BRANDplates® Insert System  
<https://bit.ly/453yIDD>