FIRST IN VITRO MODEL FOR STABLE REPPLICATION OF ARCHETYPAL BK POLYOMAVIRUS IN RPTEC AND RETINOIDS AS POTENT CANDIDATES FOR BK-POLYOMAVIRUS TREATMENT

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HINTERGRUND

The BK polyomavirus (BKPyV) has pathogenic relevance especially in immunocompromised patients such as kidney and bone marrow transplant patients leading to nephropathy and hemorrhagic cystitis. No causal therapy has been established yet, particularly, because appropriate cell culture models for archetype virus replication are missing and therefore a starting point for potent and effective drug development does not exist.

PROBLEMSTELLUNG

Drug research and development had to either rely on rearranged strains, or use alternative cells or cell lines that do not mirror "true-to-life" conditions of BKPyV infection, persistence and reactivation. So there is a desperate need for a replication system that imitates real life conditions and allows both further investigation of archetypal BKPyV life cycle as well as the development of antiviral drugs with higher efficacy and specificity, to improve current outcomes of BKPyV-mediated nephropathy and hemorrhagic cystitis.

LÖSUNG

The present technology provides, for the first time, an in vitro method for stable replication of wild type BK polyomavirus in cell culture. The technology allows propagation of the archetypal BKPyV in primary Renal Proximal Tubule Epithelial Cells (RPTEC) and is excellently suited for drug screening and identification of BK replication-inhibitors. Using this groundbreaking method the scientists were able to identify potent BK-Inhibitors presenting promising candidates for the specific treatment of BK polyomavirus infection. The detected inhibitors belong to the retinoid family. In particular the third-generation retinoid Bexarotene, already approved for treatment for cutaneous T cell lymphoma, and Fenretinide, a synthetic phenylretinamide analogue of retinol, were able to inhibit BK-replication and to reduce viral load efficiently without eliciting toxic effects.
VORTEILE

- "true-to-life" conditions of BK polyomavirus infection, persistence and reactivation
- "true-to-life" drug screening

ANWENDUNGSBEREICHE

- excellent applicability of said system for identifying BK polyomavirus inhibiting compounds

SERVICE

We are looking for partners for further development and/or commercialization of the invention.

PUBLIKATIONEN & VERWEISE

Not published, yet.