ARTIFICIAL INTERFERONS&NBSP;

Ref-Nr: TA-5850

HINTERGRUND

Interferons are a family of proteins that were originally named for their ability to interfere with viral replication and propagation. To date, it is known that interferons are also involved in combating bacterial and parasitic infections, inhibit cell division, and promote or impede the differentiation of cells. Of the known IFN alpha (IFNa) subtypes, only IFNa2 has been extensively studied for its pharmaceutical potential. IFNa2 is therapeutically used for treatment of chronic infection with Hepatitis B Virus (HBV), but leads to a sustained virus control in less than 20% of the treated patients. In chronic Human Immunodeficiency Virus (HIV) infection its efficacy is even lower, with the results that it has been clinically used in only very few studies.

LÖSUNG

Researchers of the University of Duisburg and Essen have discovered that IFNa14 is more efficient for the treatment of HBV and HIV infections. Whereas the most potent IFNa subtype against Influenza Virus is IFNa16. These findings were not only generated in vitro, but also in humanized mouse models and human organoid cultures. Based on these and earlier findings regarding the different antiviral activities of IFNa subtypes, the researchers designed chimeric mutants of the known IFNa2 and IFNa6/IFNa14/IFNa16 proteins that use the IFNa2 backbone, which is clinically well-established, with a variety of point mutations derived from the IFNa6/IFNa14/IFNa16 amino acid sequences that show significantly higher antiviral activity than IFNa2 (see Figure).

PROvendis we market innovation

PROvendis GmbH

Prof. Dr. Frank Entschladen
+49.208 94105-20
fe@provendis.info
www.provendis.info

ENTWICKLUNGSSTAND

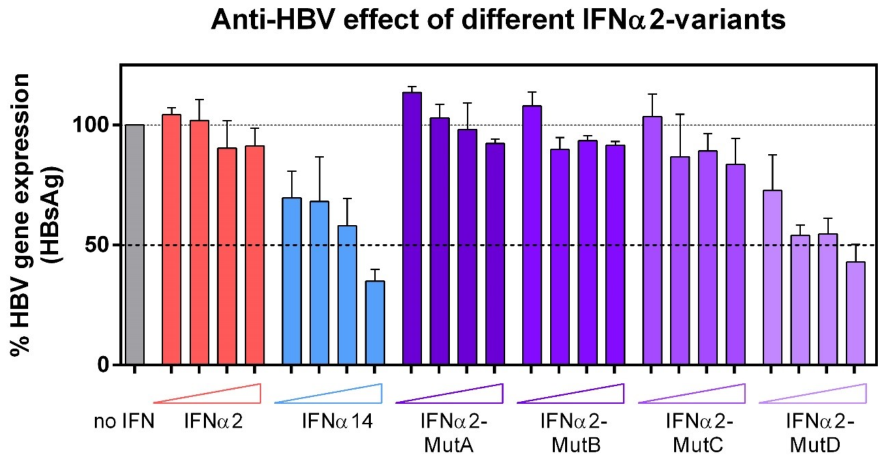
Präklinik

PATENTSITUATION

EP anhängig

CATEGORIES

//Medizin und Pharma //Therapie und Wirkstoffe



Effect of IFNα2-variants on HBV gene expression in vitro. The levels of extracellular HBsAg of HBV-infected primary human hepatocytes treated with increasing concentrations of IFNα2 mutants were examined by ELISA and normalized to the untreated control (no IFN, grey bar).

VORTEILE

- Higher antiviral efficacy than conventional IFNa2 therapy
- High biocompatibility
- IFNα2 as drug backbone is clinically well-established
- Applies to a broad range of viruses

SERVICE

The invention is available for licensing and further development together with the researchers of the University of Duisburg-Essen.

Several mutants have been generated for the treatment of chronic (e.g. HBV, HDV, HIV) or acute (e.g. Influenza, Zika, Corona) viral infections, bacterial or parasitic infections or for adjunct tumor therapy (e.g. renal-cell carcinomas, cutaneous melanoma, hairy-cell leukemia, leukemia, melanomas).

PUBLIKATIONEN & VERWEISE

Chen J., et al. (2020) Functional comparison of IFN-α subtypes reveals potent HBV suppression by a concerted action of IFN-α and -γ signaling. Hepatology doi: 10.1002/hep.31282.