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therapeutic potential of the inhibition of JNKs led to a thorough search for small-molecule inhibitors first for research purposes, but later also for therapeutic applications.

Aim. The aim of the study was to collect the information about chemical structure and biochemical effects of JNK inhibitors and their pharmacological activities.

Materials and methods. In order to achieve this goal, an information search was conducted in the materials of scientific articles.

Results and discussion. Due to the important role of JNK in the cancer development, designing effective and specific JNK inhibitors is a very active filed of research in different academic and industrial laboratories in the world. Currently, the clinical success of selective kinase inhibitors, such as imatinib and erlotinib, as therapeutic agents for several human cancers has prompted substantial interest in the development and clinical testing of such inhibitors for a wide variety of malignancies. AS601245 is a cell-permeable JNK inhibitor that shows promising anticancer effects in colon cancer and T cell acute lymphoblastic leukaemia. AS602801 is cytotoxic against CSCs derived from human pancreatic cancer, ovarian cancer, and glioblastoma. Hepatic ischemia/reperfusion (I/R), which is characterized by severe inflammation and cell death, causes significant liver damage and hepatic cancer.

Conclusions. JNK signaling is a crucial oncogenic target that raises many researcher's interest. Uncovering highly efficient selective JNK inhibitors is a hot topic of the last decade. Currently, some selective JNK inhibitors have been developed; however, more clinical studies of these inhibitors should be tested. Moreover, clinical studies of JNK inhibitors should determine which JNK inhibitor is most effective against cancer therapy.

CRISPR –HACKING THE BIOLOGICAL HARD DRIVE

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Introduction. In 2012, researchers identified a new markers-free gene editing mechanism. This exciting new technology, CRISPR, has revolutionised the industry and academic research. CRISPR allows for a highly efficient and precise gene editing process. In humans, the technology is already being used successfully to manipulate immune cells, reprogramming them to recognise cancer cells. Several such cell therapy approaches are either being planned or currently tested in US clinical trials. Furthermore, CRISPR technology could be used to cure genetic diseases at an embryonic stage. Recent published research in China has demonstrated successful use of CRISPR gene editing on human embryonic stem cells. The treatment of embryonic stem cells raises significant legal and ethical questions; a number of countries prevent such procedures by law.

Aim. The main goal is to analize the procedure of gene editing and to discuss its medical and pharmaceutical applications.

Materials and methods. In order to achieve this goal, an information search was conducted in the materials of scientific articles.

Results and discussion. The application of CRISPR technologies may lead to adverse outcomes which may not present themselves until later in life, or potentially even in subsequent generations. These could ultimately lead to long-tail and potentially high liability claims. The personalised therapy approaches for diseases such as HIV and Alzheimer's offered by CRISPR technology comes at a cost, and potentially considerable cost. At a period of stress on healthcare budgets across the world, the opportunity costs of such therapeutics have to be assessed. Wherever in the life of a human, the manipulation of the gene can have, besides the wanted, some unwanted effects. This is an especially sensitive topic when it comes to fetus, embryos, newborns or children. CRISPR based interventions following fertility treatments, respectively in young children with e.g. diagnosis of a genetic disease are exposed to medical malpractice claims.

Conclusions. While CRISPR technology clearly offers the potential to precisely treat human genetic diseases with cell therapy approaches, it will bring several ethical concerns that society will need to address quickly. CRISPR technology will doubtlessly have a massive impact on human society, including the insurance industry.

PHYSIOLOGICAL BASES OF HYPERBARIC OXYGENATION

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Introduction. Hyperbaric oxygenation is a therapeutic method that enhances the oxygen supply of hypoxic tissues and increases the ability of wound healing / tissue remodeling. Currently, HBO therapy is used not only for acute hypoxic diseases, but also for many chronic and refractory diseases with tissue hypoxia or intractable infection.

Aim. The purpose of this review is to provide an overview of the mechanisms of the therapeutic effect of hyperbaric oxygen.

Materials and methods. Data analysis of literature and Internet sources.

Results and discussion. The therapeutic effect of hyperbaric oxygen consists of a combination of its compressive, antihypoxic (partial or complete restoration of pO in tissues) and hyperoxic (an increase in pO in tissues in comparison with the norm) components of action. The compression component of hyperbaric oxygenation includes an increase in the density of the gas environment and the actual effect of increased atmospheric pressure, increased mechanical stress on external respiration, decreased physical performance in a hyperbaric environment and a decrease in the volume of gas in the body. The antihypoxic effect of hyperbaric oxygenation is due to a significant increase in the mass of physically dissolved oxygen, primarily in plasma, as well as in other liquid tissues of the body, which makes it possible to remove general and local hypoxia. The antihypoxic effect of HBO, which is important in eliminating hypoxia and its consequences, interrupting the "vicious circles" of metabolic reactions caused by hypoxia, is limited by the exposure time of hyperbaric oxygenation and quickly disappears after the end of the session. The final effect, which persists for quite a long time (up to several months), is determined not only, but rather not so much by the antihypoxic as by the hyperoxic effect of hyperbaric oxygen. The hyperoxic effect is to enhance