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Global Cancer Immunotoxins Market & Clinical Pipeline Insight 2020

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Abstracts

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Immunotoxins are new generation chemotherapeutic agents innovated to include the specificity of monoclonal antibody and cytotoxicity of toxins extracted from plant or bacterial source. The targeting moiety carries the specificity of the antibody and is directed to the target where it either binds to the cell surface antigen, receptor or the ligand of the targeted disease. Cytotoxicity is mediated by the protein toxins, which maybe protein at times.

The cytotoxic part may comprise of any molecule which has the capability to induce cell death either by interfering with the cell machinery, modifying cell membrane, or by induction of apoptotic pathways. The cytotoxicity thus successfully delivered either to cytoplasm or the ribosomes of the target cell may be lethal to the cell.

During its ignition era, immunotoxins basically comprised of monoclonal antibodies (MAb) or growth factors chemically conjugated to protein toxins by the formation of the disulphide bonds. These molecules contained full length protein toxins are were not that cell specific. With progress in the research and technology, second generation immunotoxins made an entry. They were modulated in a way to remove the toxin mediated cell binding and spare the normal cells from cytotoxicity. The immunotoxins of this generation contained full length Immunoglobulin (IgG) bound to the toxic moiety.

The entry of third generation was marked by coming of recombinant technology which was targeted to remove the immunogenicity by shifting from murine origin immunoglobulins to humanized recombinant IgGs. The molecules of this generation thus formed consisted of fragments of variable domain (Fv) conjugated to IgG. Thus,

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created immunotoxins had excellent activity, specificity, better penetration and less immunogenicity.

Immunotoxins continue to be actively investigated as viable alternatives to conventional therapies for a variety of diseases. An array of different recombinant, antibody formats are now available for use in immunotoxins. While these design changes have improved the overall in vitro and preclinical in vivo efficacy of immunotoxins, increased potency does not address either of the two major concerns for drugs of this type: immunogenicity and toxicity.

In the past three to four decades, a wide variety of immunotoxins have been tested against a wide variety of malignancies in cell culture, in animal models, and in patients. The most useful of these agents appear to be the relatively small recombinant fusion toxins that contain either growth factor or Fv fragments as ligands. The most sensitive diseases appear to be hematologic malignancies. Future development will need to address combinations of immunotoxins with other anticancer therapies in order to overcome problems of tumor penetration, toxicity, and immunogenicity.

After many years of pre-clinical development, there has been a recent burst in the number of clinical trials using antibodies or antibody fragments to target potent cytotoxic molecules to cancer cells. Several of these trials have shown impressive clinical responses indicating that we are at the beginning of a new and exciting phase of cancer treatment. Additional studies are now required to define the optimal dose, schedule, and combinations for specific malignancies. Also several problems have been identified. One of these is immunogenicity, which may be solved by removing B and T cell epitopes. Another is likely to be drug and toxin resistance. Never the less we expect this new approach is likely to have a major impact in cancer treatment.

“Global Cancer Immunotoxins Market & Clinical Pipeline Insight 2020” Report Highlights:

Introduction to Immunotoxins

Cancer Immunotoxins Therapy Analysis

Advantages of Immunotoxins upon other Anticancerous Drugs

Applications of Immunotoxins to Multiple Cancer Therapies

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Global Cancer Immunotoxins Market Future Prospects

Global Cancer Immunotoxins Clinical Pipeline by Company, Indication & Phase

Global Cancer Immunotoxins Clinical Pipeline: 52 Cancer Immunotoxins

Majority Cancer Immunotoxins in Preclinical Phase: 21 Drugs

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COMPANIES MENTIONED

AbbVie, AbGenomics, Agensys, Ambrx, Amgen, AREVA Med, Bayer HealthCare, Biotest, Celldex Therapeutics, CuraGen Corporation, Genentech, Genmab, Heidelberg Pharma, ImmunoGen, Neurocrine Biosciences, Research Corporation Technologies, Sanofi, Seattle Genetics, Sorrento Therapeutics, Spirogen

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