

Global Peptide Cancer Therapeutics Market & Pipeline Insight 2014

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Abstracts

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The conventional methods developed to prevent and eradicate the prevalence of cancer have achieved limited success in cancer treatment. These methods are confined to low specificity, safety and large number of side effects, which prompted the researchers to look for a better solution. It has been discovered that peptides can be used for effective and viable treatment of cancer without having disadvantages of conventional methods. The quintessential for using peptide cancer therapeutics is that they have high specificity, safety and efficacy which is not provide by therapeutics available in market.

The completion of human genome sequencing has helped in the research and development of peptide cancer therapeutics. The data allowed the researchers to look deep into the root cause of cancer hidden in human genome. This has allowed targeting cancer cells with high accuracy; thus, increasing the probability of treatment with high success rates. Using this data several novel molecules are being developed, which will have higher stability, effective delivery and minimal or no side-effects.

Peptide cancer therapeutics has edge in treating rare type of cancers. Conventional approaches of cancer treatments are unable to treat them successfully. Sometimes these approaches cannot be used due to unspecificity or they are not effective at all. For instance, brain cancer is a rare type of cancer that falls in this category. Brain is a very sensitive organ, to protect itself from unwanted substances it has developed blood brain barrier. It very difficult to breach, here conventional cancer therapeutics faces a sever challenge. On the other hand, peptide cancer therapeutics is able to overcome this barrier. Markets for these medicines have a huge potential and many medicines are under various phases of clinical trials

Peptide cancer therapies hold a promising future for the treatment of cancer. Various clinical trials studies have demonstrated the fact that the potential of peptide based drugs to prevent and eradicate cancer is far effective than conventional cancer therapy. In some studies, it has been found that combinatorial therapies will be more effective than individual methods. In combinatorial therapy, both conventional and peptide based cancer therapeutics are used for the treatment.

“Global Peptide Cancer Therapeutics Market & Pipeline Insight 2014” Report Highlight:

Mechanism & Market Overview of Peptide Cancer Therapeutics

Clinical Pipeline by Analysis Phase, Indication, Company & Country

Peptide Cancer Drugs in Pipeline: 183 Drugs

Marketed Peptide Cancer Drugs: 20 Drugs

Majority Drugs in Preclinical Phase: 75 Drugs

Suspended & Discontinued Peptide Cancer Drugs: 143 Drugs

Peptide Cancer Therapeutics Market Future Growth Prospects

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About

Many major diseases have been treated or eradicated from the present-day scenario. Peptide therapeutics has played an instrumental role in the eradication of Polio. For various diseases, market has seen a sharp rise in the number of peptide therapeutics, for example, diabetes section. The malady of cancer, in majority of cases, has been ineffectively treated due to lack of innovative drug and ingenious nature of the disease. The defining traits of cancer cells which make them invincible are:

- 1) The ability to proliferate without necessity.
- 2) Insensitivity to cell-cycle arrest signals.
- 3) Lack of programmed cell death (PCD).
- 4) The capacity for endless replication.
- 5) The ability to stimulate angiogenesis.
- 6) The capacity to metastasize throughout the body.

The suitability of peptide cancer therapeutic has been demonstrated in a number of clinical trials. They may be used in the treatment and diagnosis of cancer. Various peptide based drugs for cancer has been approved for clinical trials. Nowadays, combination peptide therapies are gaining emphasis due to high effectiveness and less toxicity.

Traditionally, chemotherapy is used for the eradication of cancerous cells from the body. Time required for alleviating the symptoms is significantly less than other therapies, which made it more popular among masses. With the government's support in few countries, prices have stabilized for better patient treatment. The patients paid fewer prices in lieu of severe side effects like Neutropenia and high mortality rates.

Cancer cells also frequently become resistant to chemotherapy as a consequence of cellular changes that include increased expression of drug-detoxifying enzymes and drug transporters, altered interactions between the drug and its target, an increased ability to repair DNA damage and defects in the cellular machinery that mediate apoptosis. Chemotoxic drugs like antifolates, alkylating agents, topoisomerase

inhibitors and cytotoxic antibiotics are unspecific in nature, which causes death of both cancerous and normal cells.

The problem of unspecificity lingered for a long time in front of oncologists. The solution was present within our bodies; it is immune system's capability to differentiate between normal or cancerous cells. Major Histocompatibility Complex (MHC) forms a large part of immune system, it is present on all living body cells and it controls the interaction of leukocytes with other body cells. Natural killer cells (NK), leucocytes, can kill a cancer cell, if it doesn't have the distinguishable MHC.

Specificity of NK cells to recognize cancer cells, gave an idea to develop targeted peptide based approach for prevention and eradication of cancer. It was also identified that to develop a cell based therapy, molecular genetics technologies have to be used.

Development of phage display libraries was taken into account due to its simplicity and high efficiency. Phage display has been used extensively in vitro to generate ligands to identify cancer-relevant targets.

In phage display, a cancer marker gene of a patient is inserted in phage (bacteria eating virus) to produce this protein on its surface. In this way, patient specific biomarker protein is produced by phage. Next step is to identify the positive phage from the negative ones. The isolated protein is reinjected in the patient's body, where the immune cells provoke an immune response against the cancer. For instance, this targeted therapy has been used for HER2 (human epidermal growth factor receptor 2), bFGF (basic fibroblast growth factor), CD44 (glycoprotein) to treat breast cancer, fibroma and colorectal cancer, respectively.

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