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Opinion

Drug Delivery of Bio-Molecules

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Abstract

Biotherapy is increasingly utilized in the clinic. Nonetheless, most of biological agents are short-live in human body. It costs a lot if we utilize bio-agents in their original states. Pharmaceutical modifications play key role for drug development and marketing. Different chemical or pharmaceutical modification systems are addressed this editorial articles.

Keywords: *Pharmaceutical; Drug Development; Cancer Treatment; Diabetes; Bio-Molecules*

Introduction

With the great development of biotechnology, biotherapy is increasingly used in the treatment of different types of human diseases, such as diabetes, cancer, osteoporosis and others in the clinic [1-14]. Correspondingly, biotherapy will be a therapeutic convention for future disease treatments.

Nonetheless, most of biomolecules are short-live in human body. It will cost a lot if we use bio-molecule in its original states. More recently, biomolecules are commonly added with chemical ligands or being modified to stable drug concentrations in human bodies.

Pharmaceutical relationship of bio-therapy

Original biotherapeutic molecules, such as insulin, antibodies were coming from animal or human bodies, which are commonly low toxicity and less adverse side-effects comparing with chemotherapeutic drugs. They are also high specificity. With the rapid development of biotechnology, it became popularity in clinical trials.

Obstacle of bio-therapy

There are a lot of technical limitation and obstacle in current bio-therapy popularity. Bio-therapeutics like protein, peptides, nucleotide therapy against viral infections, metabolic abnormality and cancer had a history of high-cost. Bio-agents are still very expensive for routine utility in the clinic. Further work is needed to promote and popularize disease managements via biotherapy in the future.

Current trend

So far as we know, this key aspect of pharmaceutical science has a great potentiality. A great variety of new biological drugs may come into the bedside with low toxicity and specificity of drugs. However, practicality will be improved and promoted.

Current solution to tackle with short-live of drug candidates is pharmaceutical modification. Methodology to increase half-life of regulatory/hormonal proteins, peptide, nucleotide segments and poly-saccharide in human bodies were represented as follow:

- Chemically modifying.
- Stable organic sequences ligands to bio-molecules.
- Peroxisome, liposomes and capsules to deliver biomolecules to disease sites in higher levels [15-21].

Best examples

The widest example of bioagents is insulin for diabetes-the safest agent for diabetic treatments. It has long been developed for clinical trials. Usually, the half-life for regulatory proteins or peptides (< 60 amino acid) is within 1 hour in human body. To do this, great amount of original biological molecule are needed for one patient. Some forms of elongated insulin have been entering into drug markets now [15].

Similarly, fish calcitonin is now widely used against human osteoporosis in the clinic. In the drug production, the S-S bond of eel calcitonin is replaced with C-C bond in the protein (Elcitonin, Japan). This chemically modified molecule has a much longer half-live in human bodies.

Conclusion

Though there is a long way to go for this pharmaceutical development, stabling biomolecules can promote therapeutic benefits and reduce treatment cost. Building biomolecules delivery systems has enormous usefulness in experimental and clinical setting. Such research is a new trend in drug development and clinical applications.

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