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Review Article

Aptamers: Trending Prospective in Therapeutics

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ABSTRACT: Aptamers are short stretches of Ribonucleic acid or Deoxyribonucleic acid having a specific 3D shape which form complexes with the target site with high affinity. Systemic Evolution of Ligands by Exponential Enrichment (SELEX) is responsible for the high affinity and specificity of aptamers to bind the target molecules. Due to some unique features of Aptamers, it attracts the attention of many scientists to use them as a tool in the treatment & diagnosis of various diseases and syndromes. The results obtained from the various clinical data shows that Aptamers can be used in the treatment and diagnosis of various diseases including cancer and syndromes like AIDS, severe acute respiratory syndrome etc. Many viral infections like human immunodeficiency virus, hepatitis B virus and Ebola virus are now treated or diagnosed with the help of aptamers. Along with viral infections, aptamers are also promising Chemical antibodies in the treatment of various kinds of cancer like breast cancer, lung cancer, colorectal cancer, etc. Aptamers have several advantages over conventional antibodies in context to its size, thermal stability, immunogenicity, ease of modification, etc. Aptamers are smaller than conventional antibodies, this property allows aptamers to access in tissue and cell. Aptamers are synthetic agents and we scale up its production as per requirement and it eliminate the various regulatory requirements associated with bio-production. The various roles of aptamers in the treatment and diagnosis of many life-threatening diseases, syndromes and viral infections like cancer, AIDS, Ebola virus lead aptamers to serve as Future Pharmaceutical dosage form or prospective Future of Modern Medical Science.

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INTRODUCTION

Aptamers are the short stretches of ribonucleic acid/ deoxyribonucleic acid having an ability to bind with the specific target sites/molecules with high affinity. These new agents are 3D in shape and used for diagnostic, therapeutic purpose and as a carrier to deliver drug to the target site.

This versatile nature of aptamers attracts the attention of many scientists to use aptamer as an attractive tool in a large array of biological applications. Aptamers are the unique molecule which performs several functions-

- ✓ As a drug molecule which targets the structural sites which are responsible for disease conditions.
- ✓ As a chemical antibody.
- ✓ As a drug carrier to deliver drug on target sites.
- ✓ Diagnostic applications

Aptamers are also regarded as "chemical antibodies", synthesized in laboratory and serve as an alternative of conventional antibodies. These chemical agents have an ability to overcome the limitations of antibodies [1].