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Bionanopolymers for Drug Delivery

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Abstract:

In medicine, the need and demand for the successful delivery of pharmacologically active materials or therapeutic compounds to cells, tissues, and organs in the system have made drug delivery techniques broadly studied. Several drug delivery methods have been developed and investigated in the past. The aim is to design better approaches to treat various diseases affecting humans in the world. This has led to the development and use of different materials of natural and synthetic origin as drug delivery devices. However, certain limitations and challenges have been faced with the use of most of these materials hence the need for more suitable alternatives. Some of these limitations include material toxicity, non-**biocompatibility**, and **nonflexibility** among others. At the moment, research has brought to limelight some group of materials with unique properties that can potentially serve as drug delivery systems. They are commonly referred to as **biopolymers** and because they can be manipulated, they can be fabricated into **nanosizes** (sizes of between 1 and 100 **nm**); hence, they are called **bionanopolymers**. **Bionanopolymers** are generally of natural origin, they are biodegradable and **biocompatible**. These properties have made them widely employed in biomedical applications. **Bionanopolymers** have gained attention in drug delivery and have contributed to the progress recorded in the treatment of disease conditions such as cancer, diabetes, allergy, infection, and inflammation.