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Novel drug delivery systems

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In the last few decades, pharmacists focused to develop targeted drug delivery systems. The basic aim is to deliver drug molecules directly to the target tissues which Paul Ehrlich in about a century ago mentioned and named it as magic bullets of medicine. Generally, pharmaceutical agents tend to distribute equally throughout the body. In addition, to reach the site of action, the drug has to cross vast majority of physiological and biochemical barriers which reduce the bioavailability of drugs. More importantly, after crossing through these barriers drugs should be able to elicit pharmacological action. However, nowadays, rapid advances in molecular biology, chemistry, pharmacy and nanotechnology enable a number of targeted drug delivery systems which can reach the malignant tissues selectively and accurately to the affected sites of the body.

Targeted drug delivery augments the therapeutic range of drugs in the tissues of interest while reducing the relative concentration of those in the other parts of the body. Targeting of drugs to affected site of the body offers enormous advantages:

- Provide drug levels within the therapeutic range
- Vastly decrease in toxicity and side effects
- Increase in efficacy of drugs and bioavailability
- Increase drug concentration in the target organ
- Decrease the dosage of drug

There are numerous research and review articles in the literature on targeted drug delivery for cancer, inflammations, HIV in tissues such as brain, prostate, lung, heart, liver, ocular and blood. Amongst those, cancer has much more attention than other diseases. Different types of drug carriers, varied targeting systems were developed a way to provide effective treatment for this fatal disease.

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