

Review On Prodrug : An Advance Approach for The Drug Design to Enhance the Therapeutic Efficacy

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Abstract: Prodrugs are derivatives of drug molecules that are pharmacologically inactive but require either chemical or enzymatic transformation to release the active drug in vivo in order to exert a pharmacological effect. Prodrugs have better delivery properties that surpass the parent drug molecule. Prodrug concept is justified because it enables the active drug to overcome the barrier that would impede it from reaching the site of action to exert the required pharmacological activity. Some of the barriers that the prodrug approach helps to surmount are as follows, low bioavailability due to poor aqueous solubility (corticosteroids); poor permeability or absorption (ampicillin); high first pass metabolism (propranolol); metabolic instability leading to short half-life, (dopamine); poor site specificity (anticancer agents); incomplete absorption (epinephrine); unfavorable organoleptic properties (chloramphenicol); difficulties during formulation and adverse effects and toxicity. The prodrug approach is rapidly becoming a crucial part in the stratagem of delivery of drugs. The prodrug strategy implementation in the last 20 y has led to a steady advancement in the biopharmaceutical, physicochemical and/or pharmacokinetic attributes of the pharmacologically active compounds.

Keywords: Prodrugs

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