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Design, synthesis, and biological evaluation of some new charge transfer complexes as a combination model

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ABSTRACT

The present work includes design and synthesis a new model of charge transfer complexes from simvastatine which is antihyperlipidemic drug as acceptor with angiotensin receptor blockers(candesartan ,losartan ,valsartan ,telmisartan ,irbesartan) as donors and characterization the models by UV, FT-IR ,HNMR spectrophotometry , it shows change in spectral peaks which refer to formation of charge transfer complexes. And study the effect of interaction on availability of drugs with the time , different PH and different concentrations. Which shows the variability in availability of drugs in combination (charge transfer complexes) due to PH , concentration, and time changing, this variability in availability mostly effect on simvastatine which mean decrease or absence the availability of simvastatine and increase the availability of angiotensin receptor blockers (mostly not absolutly). Beside this we study the evaluation of biological activity of combinations and compare with the biological activity of simvastatine alone on the lipid profile of rabbits , by induced hypercholesterolemia in rabbits for two weeks (except the positive control group) and gave the drugs for four weeks and measuring the lipid profile changing in order to improve the change in the efficacy of simvastaine alone and simvastatine in combinations and this variability due to donor-acceptor interaction (charge transfer interaction)

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INTRODUCTION

The term charge transfer complex (CTC) was first used by Mulliken. He describes a new type of adduct to describe the behavior of certain molecular groups, which do not adhere to the traditional patterns of ionic, covalent, and hydrogen bonding components. While these adducts generally retain some of the component properties, some changes are obvious For example, its solubility, its diamagnetic and paramagnetic susceptibility. Charging interactions within a molecular complex consisting of an electron donor D and an electron acceptor A include resonance with charging transfer from D to A (Abdulredha, 2015).

It is important phenomenon in the process of biochemical and bioelectrochemical energy. The term charge transfer gives kind of complex resulting from donor and acceptor interactions with the formation of weak bonds and widely discussed by Foster. In molecular interactions between electron donors and receivers are correlated with formation of strongly colored charge Transfer complexes (CTCs) which absorb radiation in visible region. Important processes in biological systems are molecular complexation and structural recognition. Drug action, catalysis of enzymes and movement of ions via lipophilic membranes all require complexation.