

INTERACTION BETWEEN PAMAM G4-OH DENDRIMER AND 5-FLUOROURACIL IN AQUEOUS SOLUTION

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Poly(amidoamine) dendrimers (PAMAM) are polymeric macromolecules that can find their use as carriers oncologic drugs, including among others 5-fluorouracil. The surface groups in PAMAM dendrimers belonging to the fourth (G4) and fifth (G5) generation allow ligand molecules not only to bind with terminal dendrimer groups but also to penetrate the dendrimer interior and to react with the groups localized in it. More and more frequently tested polymers of this kind include dendrimers of the PAMAM class, which surface groups are substituted by hydroxyl groups. Such modified dendrimers are better tolerated by organism than their cationic equivalent.

The aim of our study was to evaluate the number of 5-fluorouracil molecules, an oncologic drug, combined by PAMAM G4-OH macromolecule and the equilibrium constant of the 5-FU combination with the active sites of this dendrimer in aqueous solution.

The formation equilibrium of PAMAM G4-OH dendrimer complex with an oncologic drug such as 5-fluorouracil (FU) in aqueous solution at room temperature was examined. Using the results of the drug solubility in dendrimer solutions and the method of equilibrium dialysis, the maximal number of drug molecules in the dendrimer-drug complex and its equilibrium constant were evaluated. The character of bonding between 5-FU and the active sites of hydroxylated PAMAM dendrimer is reversible and the interactions between the drug and PAMAM G4-OH dendrimer are weaker than with their cationic equivalent.