SPECTROSCOPIC STUDY OF COMPLEXES OF A-CYCLODEXTRIN WITH THIABENDAZOLE

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Cyclodextrins are cyclic oligosacharides shaped like a hollow truncated cone containing 6 (α-CD), 7 (β-CD), or 8 (γ-CD) α-1,4-glucopiranose units with a relatively hydrophobic central cavity and hydrophilic entrances. That en able them to form monomolecular inclusion complexes with various organic and inorganic guest entities in different solvents. Molecular complexation with cyclodextrin (CD) has been generally accepted more efficient method to improve solubility poorly soluble drugs or pesticides.

Thiabendazole (2-(4-Thiazolyl)-1 H-benzimidazole) (TBZ) is a broad spectrum systemic fungicide used for controlling some plagues, e.g. mold, rot, blight and stain in all kinds of crops, especially fruit and vegetables, both pre and post – harvesting.

The inclusion complex of thiabendazole with α-CD is definied by UV-VIS spectroscopy (Specord 50). This study indicates that the concentration of thiabendazole in aqueous solution of α-cyclodextrinis increasing 4 times.

INTERACTION BETWEEN PPI G4 DENDRIMER AND 5-FLUOROURACIL IN AQUEOUS SOLUTION

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Poly(propylene imine) dendrimers (PPI) are polymeric macromolecules that can find their use as carriers oncologic drugs, among others 5- fluorouracil. The surface groups of PPI dendrimers belonging to the fourth (G4) and fifth (G5) generation allow ligand molecules to bind both with

surfaceand internal amino groups. Cationic dendrimers like PPI can bind negatively charged or neutral (but polarized) ligand molecules forming supramolecular complexes.Because of their defined structure, narrow polydispersity, defined nanoscale size and the ease of modification of the end groups, PPI dendrimers are considered interesting candidates for various functions in life sciences and medicinal chemistry.

The aim of our study was to evaluate the ability of cationic PPI G4 dendrimer to bind 5-fluorouracil in aqueous solutions. The studied PPI G4 macromolecule ($C_{378}H_{880}N_{126}$, MW 7168.1 Da) has diaminobutane (DAB) core, 60 internal amino groups (in branching points) and surface built from 64 terminal amino groups. 5-Fluorouracil is an oncological drug with a high toxicity, acting as pyrimidine antimetabolite, used to control the tumors of head, neck, digestive tracts and mammary cancer.

Using the equilibrium dialysis results, the maximal number of drug molecules in the dendrimer-drug complex and its equilibrium constant were evaluated.Binding process of 5-FU molecules by the active sites of PPI G4 dendrimer is reversible and spontaneous in aqueous solutions at room temperature.

STUDY OF INTERACTION BETWEEN B-CYCLODEXTRINS AND PHENYLBUTAZONE IN AQUEOUS SOLUTIONS

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Phenylbutazone, is a non-steroid anti-inflammatory drug. The poor solubility and wettability difficulties in pharmaceutical formulation either for oral or parenteral use has to be studied.

The main goal of our research was examine formation constant and physical-chemical parameters of the phenylobutazone-β-cyclodextrin complex formed using isothermal titration calorimetry. Second part of our research was describe the impact β-cyclodextrin to increase the water solubility examined nonsteroidal anti-inflammatory drug.

Calorimetric measurements were carried out in isothermal calorimeter