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- $\beta$ -cyclodextrin complex formed using isothermal titration calorimetry. Second part of our research was describe the impact  $\beta$ -cyclodextrin to increase the water solubility examined nonsteroidal anti-inflammatory drug.

Calorimetric measurements were carried out in isothermal calorimeter

for VP-ITC titrations (MicroCal- USA) at a temperature of 298.15 K. The aqueous solution of phenylobutazone was titrated  $\beta$ -cyclodextrin from a syringe. The titrate solutions in all the mentioned measurements were injected from a syringe with 50 ratios, 5 µl each. For the determination of concentration of PBZ we used UV-VIS spectrophotometer Specord 50. To determine the increase solubility of phenylbutazone in water caused by the presence of  $\beta$ -CD, aqueous solutions of  $\beta$ -CD with concentrations from 0.5 mM to 15 mM, to which excess solid PBZ was added.

The calorimetric titrations ITC of aqueous solutions of phenylobutazone with the  $\beta$ -cyclodextrin solutions discussed indicate a spontaneous formation of stable inclusion complexes of 1 (FBZ):2 ( $\beta$ -CD).UV-VIS spectroscopy confirm the effect of natural cyclodextrin increase solubility of phenylobutazone in water.