between the flavonol quercetin and the disaccharide rutinose. It is one of the phenolic compounds found in the invasive plant species *Carpobrotus edulis* and contributes to the antibacterial and antioxidan properties of the plant. Rutin inhibits platelet aggregation as well as decreases capillary permeability, making the blood thinner and improving circulation what makes it useful in medicine and veterinary medicine. Quercetin and rutin are flavonoids with low solubility in water. To increase the bioavailability of those oral-taken drugs it is worth to check influence of the cyclodextrins on those substance. Cyclodextrins are able to improve solubility of the guest drug inserted into their cavities and make the drug absorption in the gastro-intestinal tract more effective.

One of the methods to examine the complex formation between drugs and cyclodextrins is differential scanning calorimetry (DSC111) and UV-Vis spectroscopy. The set of parameters of interaction given by these experimental methods brings information about the strength and the energetic aspects of complex formation between guest and host molecules.

In this work the interaction parameters from DSC111 and UV-Vis measurements like binding constant, enthalpy of binding β-cyclodextrin with quercetin and rutin are presented. The parameters of complex formation are compared with each other and with available literature and the conclusions are made.

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

Palecz B.[1], Buczkowski A.[1], Belica S.[1], Zavodnik L.B.[2]
[1] – Department of Physical Chemistry, University of Lodz,
Pomorska 165, 90-236 Lodz
[2] – Departament of Pharmacology and Physiology
Agricultural University of Grodno, Belarus

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.

ENTHALPIC PAIR INTERACTION COEFFICIENTS BETWEEN AMINOPHOSPHONIC ACIDS IN WATER AND AQUEOUS UREA AT 298.15 K

Palecz B.[1], Grala A.[1], Kudzin Z.[2], Zavodnik L.B.[3]

[1] – Department of Physical Chemistry, University of Lodz Poland

[2] – Department of Organic Chemistry, University of Lodz Poland

[3] – Departament of Pharmacology and Physiology Agricultural University of Grodno, Belarus

Aminophosphonic acids are analogs of natural aminoacids. Aminophosphonate molecule consists a constant group NH_2-CH_2-PO_3H_2 and vane side chains -R which shows different affinities to water and are partly responsible for hydrofobic –hydrofilic properties. The structural analogy of these compounds is due to diverse biochemical activity, displayed especially in agrochemistry – glyphosate (N-(phosphonomethyl)glycine) is one of the most popular herbicide. They compete to active centre of enzymes as result it can inhibit enzymes such as aminotransferases or proteases. Their variety applications include enzyme inhibitors, potent antibiotics, herbicydes, and also antitumor medicines. Aminophosphonates also occure in many living organisms, eg. bacteria, protozoa, inverbrates, sea anemones, mussels.

Thus is interesting to research interaction between these compounds and constituent organisms fluids, for example urea. Urea is used to produc-