

## **INTERACTIONS BETWEEN SERTRALINE HYDROCHLORIDE AND SOME B-CYCLODEXTRINS**

**Palcz B.<sup>1</sup>, Belica S.<sup>1</sup>, Zawodnik I.<sup>2</sup>, Zawodnik L.<sup>3</sup>**

<sup>1</sup>Department of Physical Chemistry

University of Lodz, Poland

<sup>2</sup>Department of Biochemistry, Yanka Kupala Grodno State University Grodno  
Grodno, Belarus

<sup>3</sup>Department of Biochemistry, Agricultural University of Grodno  
Grodno, Belarus

Sertraline hydrochloride is an antidepressant with low solubility in water. To increase the bioavailability of this oral-taken drug it is worth to check influence of the cyclodextrins on this substance. Cyclodextrins are able to improve solubility of the guest drug inserted into their cavities and make the drug absorption in the gastrointestinal tract more effective.

One of the methods to examine the complex formation between drugs and cyclodextrins is the isothermal titration calorimetry (ITC). The set of parameters of interaction given by this experimental method brings information about the strength and the energetic aspects of complex formation between guest and host molecules.

In this work the interaction parameters from ITC measurements like binding constant, enthalpy, entropy and Gibbs energy of binding  $\beta$ -cyclodextrin and their derivatives like heptakis(2,6-di-O-methyl)- $\beta$ -cyclodextrin and 2-hydroxy-propyl- $\beta$ -cyclodextrin with sertraline hydrochloride in water at 298.15 K are presented. The parameters of complex formation are compared with each other and with available literature and the conclusions are made.

## **INTERACTIONS BETWEEN SEVERAL AMINOPHOSPHONIC ACIDS AND UREA IN WATER AT 298.15 K**

**Palcz B.<sup>1</sup>, Grala A.<sup>1</sup>, Kudzin Z.<sup>2</sup>, Zawodnik L.B.<sup>3</sup>**

<sup>1</sup>Department of Physical Chemistry, University of Lodz, Poland

<sup>2</sup>Department of Organic Chemistry, University of Lodz, Poland

<sup>3</sup>Department of Biochemistry, Agricultural University of Grodno, Belarus

Aminophosphonic acids are an important class of simple mimetics of natural aminoacids. These compounds differ in carboxylic and phosphonic group. The core of aminophosphonate molecule contains a constant  $\text{NH}_2\text{-CH}_2\text{-PO}_3\text{H}_2$  group and the core of amino acids is  $\text{NH}_2\text{-CH-COOH}$ . Side substituent  $\text{-R}$  shows various affinities to water and is partly responsible for hydrophobic–hydrophilic properties.

As a result of the structural analogy of these two classes of amino acids, aminophosphonates exhibit significant biochemical activity, displayed spectacularly in agrochemistry and pharmacology field. Their variety applications include enzyme inhibitors, antibiotics, herbicides, and also antitumor agents.

Thus it is interesting to research interaction between these compounds and constituent organisms fluids, for example urea. In these studies solution enthalpies of