

1 Conference Proceedings Paper

## 2 Inclusion complexes of new ibuprofen 3 thiazolidin-4-ones with $\beta$ -cyclodextrin

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13 **Abstract: 1) Background:** Cyclodextrins are used in various areas due to their ability to form  
14 inclusion complexes and to modify some properties of the guest molecule. The characteristics that  
15 can be improved are related to solubility of poorly water-soluble drugs, stabilization of labile  
16 guests against the degradative effects of environment (oxidation, light and heat), bioavailability,  
17 decreasing of side effects, taste modification or odour elimination and controlling of drug release.  
18 Also, ibuprofen is a very used nonsteroidal anti-inflammatory drug in treating pain and  
19 inflammation, but the long-term use of this drug has been associated with gastrointestinal side  
20 effects and nephrotoxicity. These led to introducing of new compounds of ibuprofen with  
21 improved profile. **Aim.** The research project combine two actual topics in pharmaceutical area:  
22 developing new safer drugs and improving the pharmacokinetic and pharmacotoxicological  
23 profile through complexation with cyclodextrins. The main objective was to develop drug delivery  
24 systems based on cyclodextrins and new ibuprofen thiazolidin-4-ones as potential analgesic and  
25 anti-inflammatory drugs. **2) Methods:** Thiazolidin-4-one derivatives of ibuprofen were included in  
26  $\beta$ -cyclodextrin complexes by co-precipitation (1:1M) and lyophilization methods. The inclusion  
27 complexes were characterized using spectral methods such as infrared analysis (FTIR), NMR  
28 spectroscopy and phase solubility studies. The surface morphology was studied using scanning  
29 electron microscopy (SEM). **3) Results and conclusions:** There were obtained and characterized 4  
30 inclusion complexes with  $\beta$ -cyclodextrin and new ibuprofen derivatives with thiazolidin-4-one  
31 structure. These can confirm the theoretical premises for an improved pharmacological and safety  
32 toxicological profile and can continue with future studies (in vivo biological evaluation of  
33 pharmacokinetic, analgesic and anti-inflammatory profile).

34 **Keywords:** ibuprofen, thiazolidin-4-one,  $\beta$ -cyclodextrin  
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39 **Conflicts of Interest:** The authors declare no conflict of interest. The founding sponsors had no role in the  
40 design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in  
41 the decision to publish the results.

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