THE PACKING MOTIFS IN THE CRYSTALS OF N-SUBSTITUTED SUCCINIMIDES WITH CONFIRMED ANTICONVULSANT ACTIVITY

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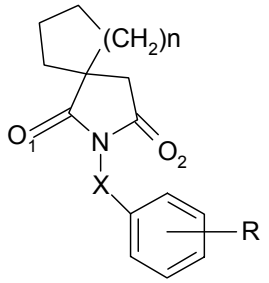

X = CH_2, NH
R = H, CH_3, Cl, CF_3, COOH

In our reaserch programe concerning compounds with confirmed biological activity, we have focused our attention on varius geomerical phenomena, important for ligand – receptor interactions [1]. In this aspect, beside molecule conformation, also intermolecular interactions of the molecules in the crystal should be taken into account. As epilepsy is a civilization disease, recently near 50 millions people in the world have been expecting help. For that reason, systematic search for new effective anticonvulsants has been still in focus of medicinal chemistry. All studied by us new succinimides with potential anticonvulsant activity are the subject of pharmacological and supplemental studies focused on drug design. Taking the above into consideration, we have oriented our recent structural study with new N-substituted-3-spiro-succinimides (see Schemat) to precise analysis of intermolecular interactions in the crystals. We have supposed that it would help us to recognize the connections pattern of succinimides to the respective receptor [2].

In view of one-atomic linker X (NH or CH_2), studied compounds have been divided into two groups of derivatives: N-amino and N-benzyl-derivatives respectively. The electronegativity of linking atoms is different. Therefore, the different opportunity of H-bond formation has been evident. Nevertheless, related main packing motif in both groups of derivatives has been identified. Thus, supramolecular synthons (dimmers or chains) are created with participation of linking atom (X = C or N) as the bonds of X - H···O = C. The weaker interactions [C(ph)- H(ph)···O = C] join the synthons into three-dimensional net within the crystals [3, 4].

Carboxyl oxygen atoms not identically participated as proton acceptor in the strongest H-bonds. This has been in agreement with different depths of MEP minimum in proximity of particular oxygens.

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This study was partly supported by the KBN grand Nr 3P05F 024 25.