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SYNTHESIS AND EVALUATION OF THE ACTIVITY TOWARDS 5-HT RECEPTORS OF NEW LIGANDS FROM THE LCAPS GROUP

Anna Drabczyk,[a] Jolanta Jaśkowska,[a],* Damian Kułaga,[a] Grzegorz Satała[b] and Magdalena Malinowska[a]

[a] Cracow University of Technology, Department of Chemical Engineering and Technology, Institute of Organic Chemistry and Technology, 24 Warszawska St., 31-155 Cracow, Poland
[b] Department of Medicinal Chemistry, Institute of Pharmacology Polish Academy of Sciences, 12 Smetna St., 31-343 Cracow, Poland
* jaskowskaj@chemia.pk.edu.pl

Long-chain arylpiperazines (LCAPs) are an interesting group of compounds which have activity towards the serotonin receptors.[1] These compounds contain in their structure arylpiperazine moiety which, through the flexible alkyl chain, is linked mostly to imide, amide, or sulfonamide moiety. These compounds are generally obtained by several hours' long, multi-step synthesis which requires the use of large amounts of solvents. This method of carrying out the reactions also requires the removal of solvents from the reaction mixture and purification of the compounds by using Pressure Liquid Chromatography Column.[2-4]
One of the best known compounds belonging to the group of LCAPs having activity against the serotonin 5-HT receptors is NAN-190 – 1-(2-methoxyphenyl)-4-(4-phthalimidobutyl)piperazine which has a methoxy substituent in the *ortho* position in the aromatic ring of arylpiperazine moiety.[5]
Within the framework of the research, basing on the structure of NAN-190, it was decided to check the influence of lengthening the alkyl chain connecting the arylpiperazine group with the phthalimide, as well as the impact of the position of methoxy group in the aromatic ring of arylpiperazine moiety. The group of ligands was obtained by newly developed method of synthesis which follows the principles of "Green Chemistry". The reactions were carried out within a few minutes under microwave irradiation, using small amounts of solvents. The performed reactions allow obtaining the desired products with high purity in a short time and with a high yield. All obtained ligands were evaluated in *in vitro* tests for their affinity with selected serotonin 5-HT receptors. The results from these studies confirm high biological activity of testing compounds.

Acknowledgments: *The study was financially supported by the National Centre for Research and Development, Project LIDER VI (No. LIDER/015/L-6/14/NCBR/2015).*

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