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Synthesis, Anticonvulsant Activity and 5-HT_{1A}, 5-HT_{2A} Receptor Affinity of New N-(4-Arylpiperazin-1-yl)-propyl- Derivatives of 3,3-Disubstituted Pyrrolidine-2,5-dione.

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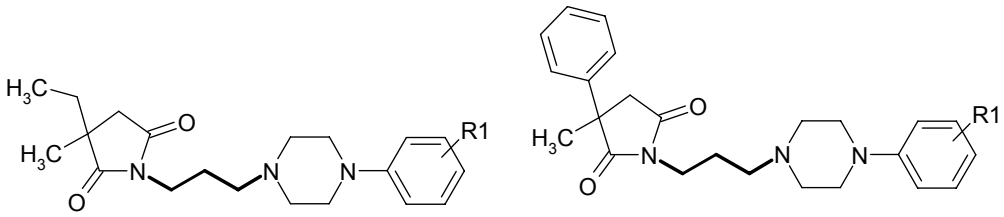
In the course of developing new potential anticonvulsant agents and 5-HT_{1A}/5-HT_{2A} receptor ligands we focused our attention on a group of 3-substituted-pyrrolidine-2,5-diones with a 4-aryl-piperazin-1-yl-alkyl fragment at the imide nitrogen atom. Between these compounds many derivatives exhibited anticonvulsant activity, as well as, higher affinity to 5-HT_{1A}/5-HT_{2A} receptors [1, 2].
In line with the above findings, in the present study we obtained two series of N-[(4-arylpiperazin-1-yl)-propyl]-3-methyl-3-phenyl- and 3-ethyl-3-methyl-pyrrolidine-2,5-diones. All the above mentioned compounds were tested *in vivo* for their anticonvulsant activity within the Antiepileptic Drug Development (ADD) Program, Epilepsy Branch, National Institute of the Neurological and Communicative Disorders and Stroke (NINCDS), Rockville, using procedures described elsewhere [3, 4]. The affinity of the investigated compounds for 5-HT_{1A} and 5-HT_{2A} receptors *in vitro* was assessed on the basis of their ability to displace [^{3}H]-8-OH-DPAT and [^{3}H]-ketanserin, respectively. The structures of the compounds synthesized are presented below.



R1 = H, 2-F, 4-F, 2-Cl, 3-Cl, 4-Cl, 3-CF_3, 2-OCH_3

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