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# SYNTHESIS AND BINDING ANALYSIS OF CARBONIC ANHYDRASES INHIBITORS – 1, 2-DISUBSTITUTED 6-CHLOROBENZIMIDAZOLE-5-SULFONAMIDES

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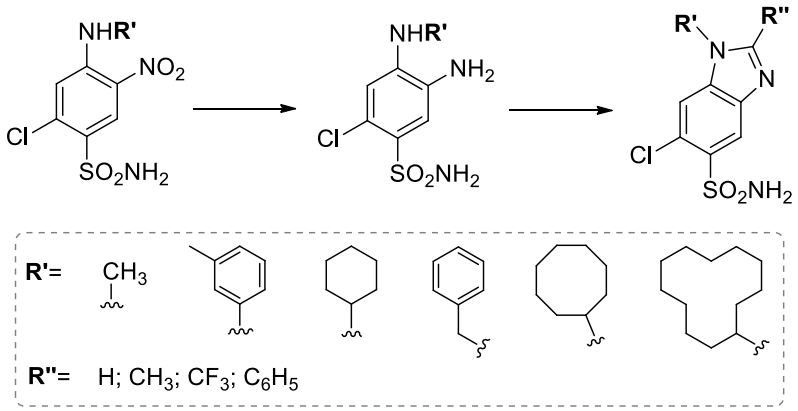
CAs are family of zinc metalloenzymes that catalyzes the reversible hydration of carbon dioxide. There are twelve active CA isoforms in humans which all have very different subcellular localization, tissue distribution and catalytic activity. Some of these isozymes are potential targets for the development of antiglaucoma, diuretic, antiobesity, anticonvulsant or anticancer drugs [1]. The most common and well-studied class of CA inhibitors is aromatic/heterocyclic sulfonamides. Unfortunately, many sulfonamides synthesized to date possess a lack of selectivity, therefore a great need of potent and selective CA inhibitors remains.

Benzimidazoles occur in a wide variety of pharmaceutically important scaffolds in medicinal chemistry and are key structures in various biologically active compounds. In this study variously substituted benzimidazoles served as sulfonamide scaffold developing new carbonic anhydrase (CA) inhibitors and investigating their substitution effect on the inhibition selectivity.




Synthesis pathways were analyzed and series of 1,2-disubstituted 6-chlorobenzoimidazole-5-sulfonamides were synthesized. Binding of synthesized compounds to CA isoforms was determined by the fluorescent thermal shift assay (FTSA).

**References**

1. C. Lomelino, R. McKenna, Expert. Opin. Ther. Pat., **26** (2016) 947-956.

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