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RESEARCH AREA

Cancer is the second leading death cause globally, and is responsible for nearly 10 million deaths in 2020. The application of conventional anti-cancer drugs is often limited by their excessive undesirable side-effects due to their lack of selectivity. A possible emerging strategy is the selective inhibition of ATR kinase, as the function of the enzyme is crucial for cancer cells, while the lack of it is well tolerated in healthy cells.

Lately, our research group reported the isolation of potent ATR inhibitors from plants, however, the source is limited and their total synthesis is cumbersome due to their complicated structure. The pharmacophore of the isolated compounds was identified as the non-aromatic p-quinol ring.

Our aim is to build a compound library - containing the pharmacophore in a diverse chemical environment-, to evaluate the in vitro anticancer activity and investigate the structure-activity relationships in order to optimize the structure and better understand the mechanism of action.

TECHNIQUES AVAILABLE IN THE LAB

We apply a wide variety of standard molecular biological The target oriented chemical synthesis requires careful and detailed planning of the applied methods and equipment. The reactions are followed by thin layer chromatography and analytical HPLC, while for the purification of the prepared compounds diverse separation techniques are available: preparative HPLC, supercritical fluid chromatography, flash chromatography, column chromatography, rotational planar chromatography and centrifugal partition chromatography. Characterization of the synthesized compounds are performed via NMR and HRMS techniques. Students also have the possibility to participate in the in vitro anticancer activity measurements at the cooperating partners.

SELECTED PUBLICATIONS

Dékány, A., Lázár, E., Szabó, B., Havasi, V., Halasi, G., Sápi, A., Kukovecz, Á., Kónya, Z., **Szőri, K.**, London, G. (2017) Exploring Pd/Al2O3 Catalysed Redox Isomerisation of Allyl Alcohol as a Platform to Create Structural Diversity. **Catal Letters 147(7):** 1834.

Gurka, A.A., **Szőri, K.**, Szőri, M., Bartók, M., London, G. (2017) Application of hydroxyproline derivatives in enantioselective α-amination reactions in organic and aqueous environments: a structure-activity relationship study. **Struct Chem 28(2):** 415.

Szőri, K., Réti, B., Szőllősi, G., Hernádi, K., Bartók, M. (2016) Comparative Study of Graphite-Oxide and Graphene-Oxide Supported Proline Organocatalysts in Asymmetric Aldol Addition. **Top Catal 59(13-14):** 1227.

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Zsolnai, D., Mayer, P., **Szőri, K.**, London, G. (2016) Pd/Al2O3-catalysed redox isomerisation of allyl alcohol: Application in aldol condensation and oxidative heterocyclization reactions. **Catal Sci Technol 6(11):** 3814.