

## DEVELOPING TOOLS FOR BIOLOGY: STUDY OF NEW CLASSES OF SYNTHETIC CYSTEINE-PROTEASE INHIBITORS AND SOME PRELIMINARY APPLICATIONS

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The development of synthetic proteases inhibitors is an exciting area of interdisciplinary work involving synthetic chemistry and biology; it enables the development of novel tools for Biological Sciences and to the discovery of candidates for drugs, since proteases are recognized targets for drug discovery. In this context, our research involves the development of new protease inhibitors based on the reactivity displayed by the proteases and the proposed inhibitors. Using this principle, we tested two small libraries one of organotelluranes and another of nitrostyrenes towards several cysteine-proteases from plants, parasites, virus and mammals. In general, micro- and submicromolar IC<sub>50</sub> values were obtained for the examples tested. The mechanism of inhibition was studied and docking studies was done to help planning derivatives with increased affinity and selectivity. As an example of the utility of the tested compounds, we succeeded the titration of poliovirus protease 3C. This *in vitro* application stands for just one of the possible array of further applications for these enzyme inhibitors.

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