



Pro-oxidant Catalysts and Reagents: Perspective for Novel Ecofriendly Reactions and Therapeutic Approaches

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For a long period, our research was mainly focused on the application of electrophilic organoselenium reagents or catalysts in organic synthesis. More recently, exploring the role of selenium in biomimetic reactions its role as an oxygen transfer catalyst emerged as a novel intriguing strategy to approach oxidation reactions under ecofriendly conditions. Beside the optimization of a series of new green protocols for the synthesis of vicinal diols, hydroxy-lactones, oxaziridines and oxidized sulfur derivatives we envisioned the possibility to use the pro-oxidant activity for the development of novel enzymatic inhibitors. The discovery of new anti-HIV¹ and anti-SARS-Cov2² will be here reported and discussed in the contest of a still ongoing debate on their current mechanism(s).

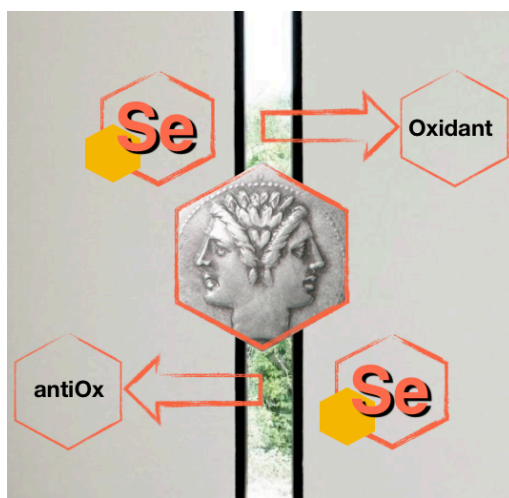


Figure 1: Selenum as a Janus element.

The conference is dedicated to the memory of our mentor prof. Marcello Tiecco in the occasion of the 10th anniversary of the death!

References:

- a) 1. Sancineto, L.; Mariotti, A.; Bagnoli, L.; Marini, F.; Desantis, J.; Iraci, N.; Santi, C.; Pannecouque, C.; Tabarrini, O. Design and Synthesis of DiselenoBisBenzamides (DSeBAs) as Nucleocapsid Protein 7 (NCp7) Inhibitors with Anti-HIV Activity. *J. Med. Chem.* **2015**, *58*, 9601–9614, doi:10.1021/acs.jmedchem.5b01183. b) 1. Mangiacacchi, F.; Botwina, P.; Menichetti, E.; Bagnoli, L.; Rosati, O.; Marini, F.; Fonseca, S.F.; Abenante, L.; Alves, D.; Dabrowska, A.; et al. Seleno-Functionalization of Quercetin Improves the Non-Covalent Inhibition of Mpro and Its Antiviral Activity in Cells against SARS-CoV-2. *IJMS* **2021**, *22*, 7048, doi:10.3390/ijms22137048.