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Synthesis and biological capacity of *N*-substituted alkyl benzisoselenazolones and diselenides

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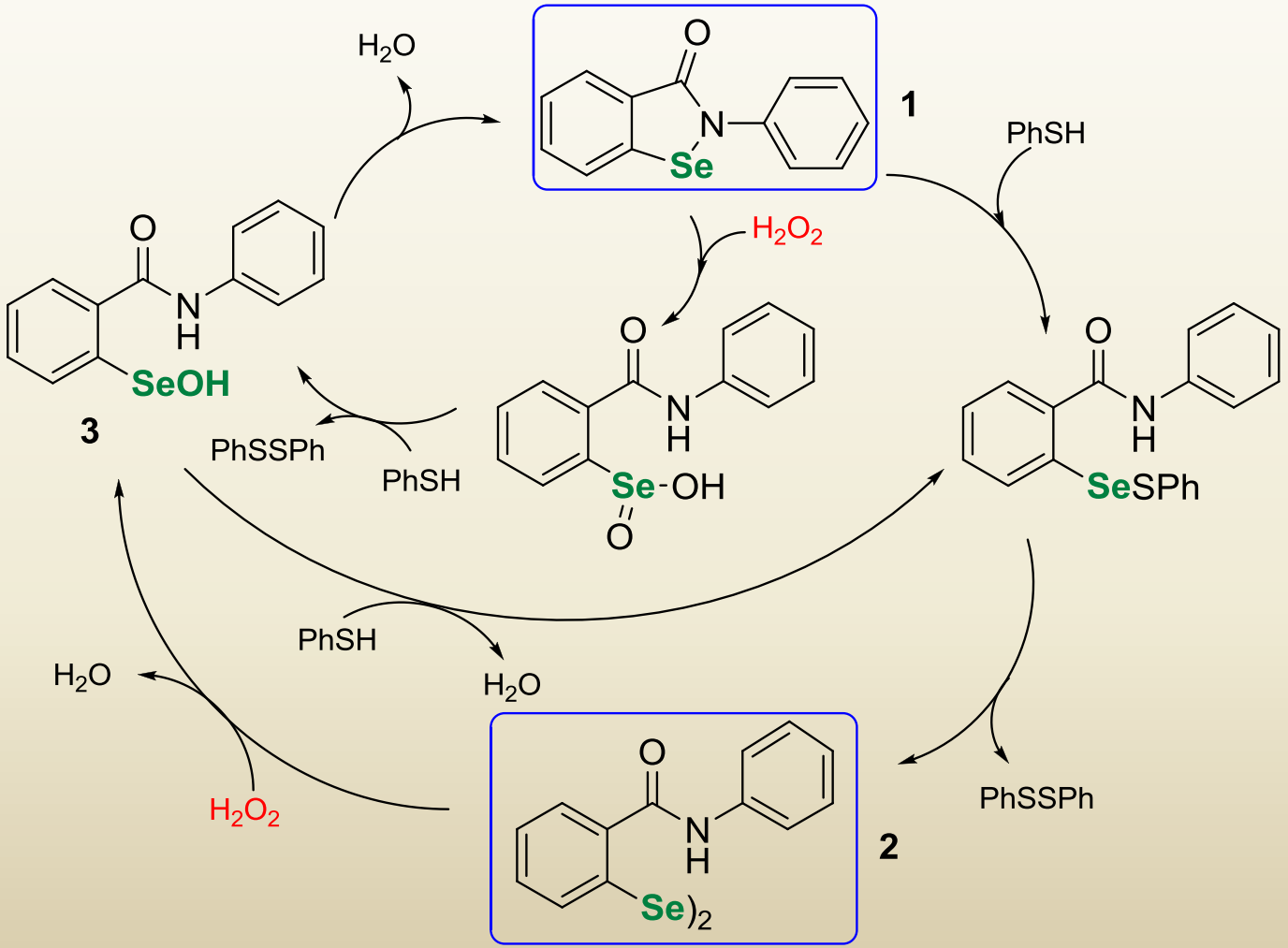
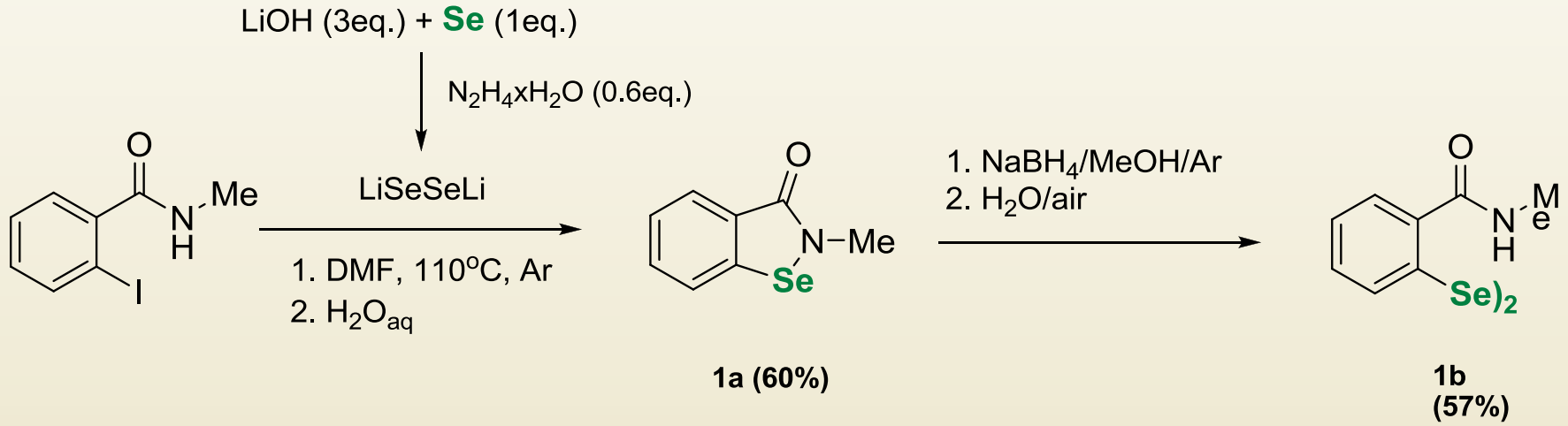
Mechanism of H_2O_2 elimination by benzisoselenazol-3(2H)- one 1 and diselenide 2



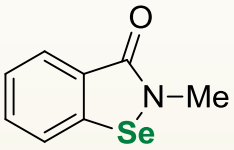
Bhujan, B.J.; Mugesh, G. *Biological and Biochemical Aspects of Selenium Compounds in Organoselenium Chemistry*, Wirth, T. (ed.) WILEY-VCH; Weinheim, **2012**.

Synthesis of benzisoselenazol-3(2H)-ones 1a and corresponding diselenides 1b

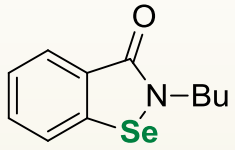


Paculа, A. J.; Ścianowski, J.; Aleksandrzak, K. B. *RSC Adv.* **2014**, *4*, 48959-48962.

Obtained organoselenium derivatives

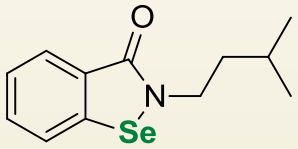


1a (60%)

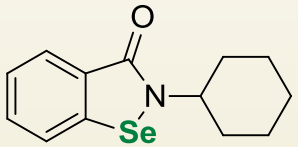


2a (82%)

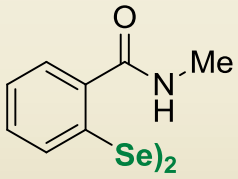
3a (91%)



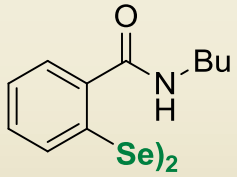
4a (98%)



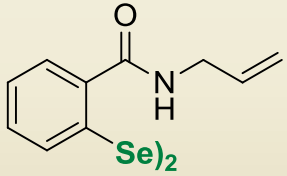
5a (88%)



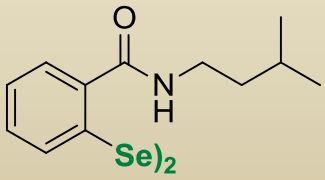
1b (57%)



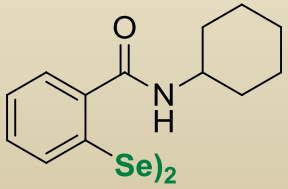
2b (78%)



3b (82%)

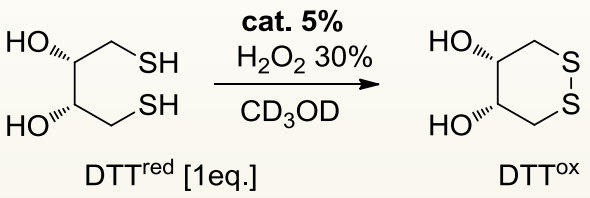


4b (60%)

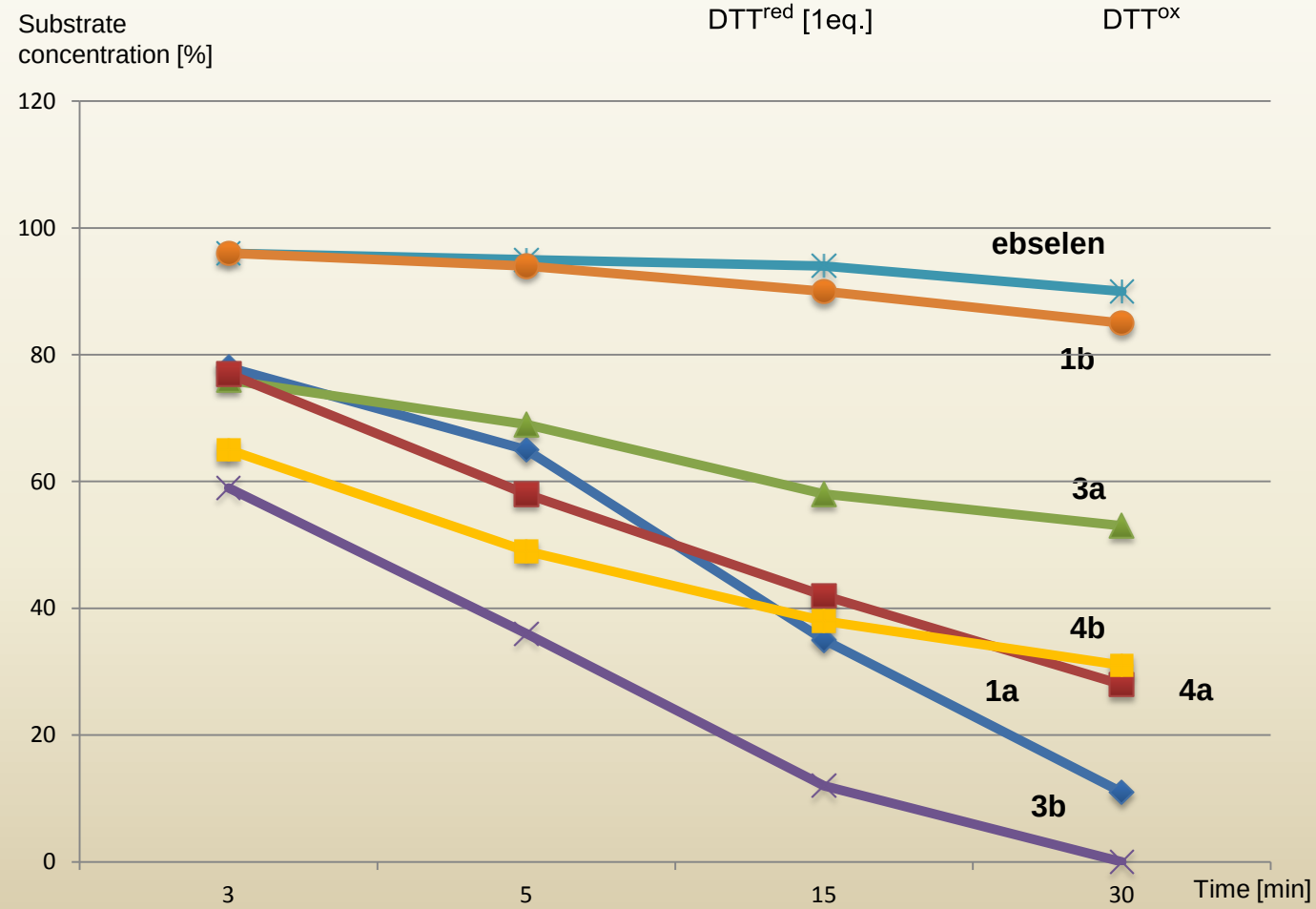


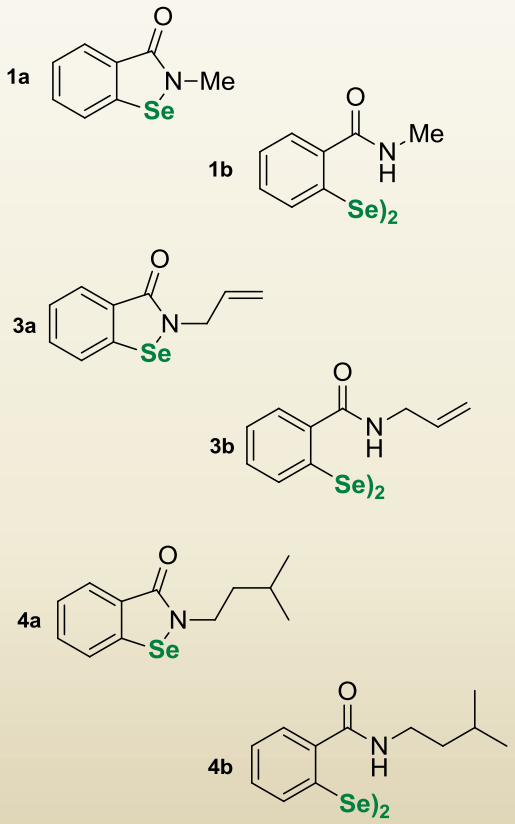
5b (76%)

Selected catalysts of high antioxidant activity

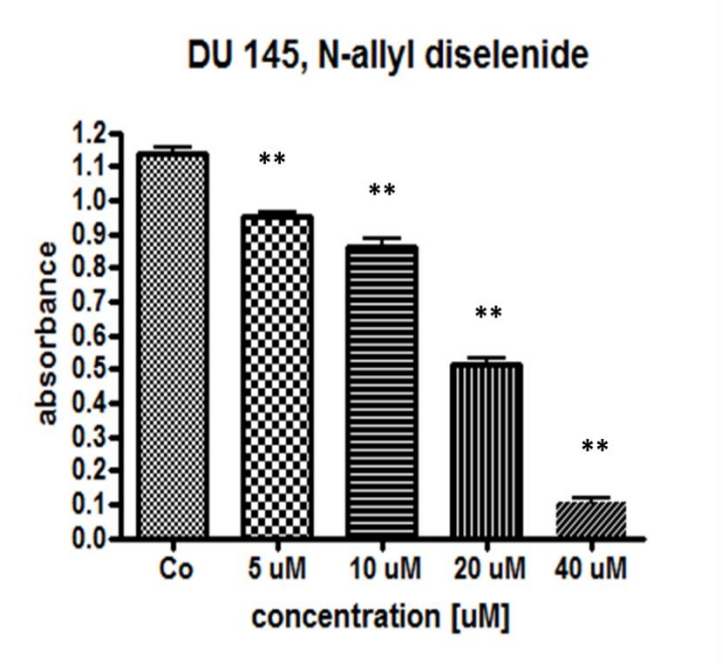


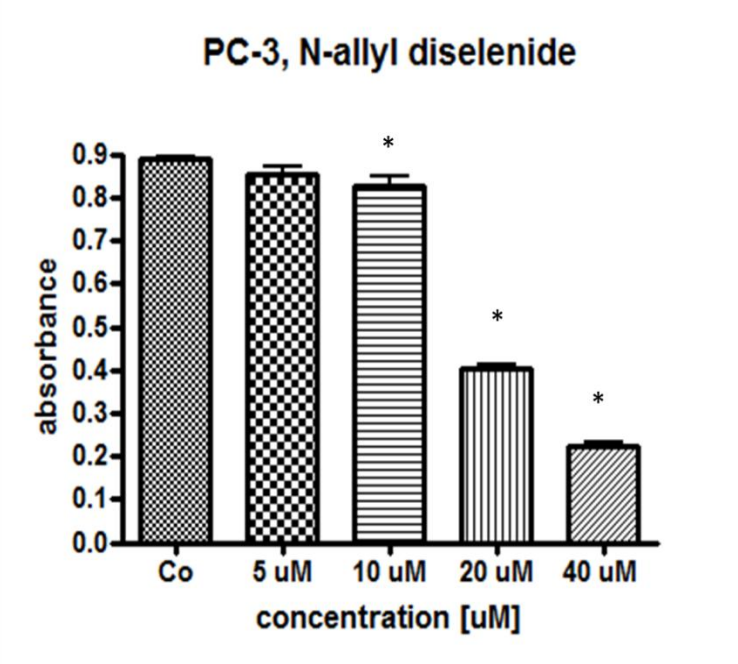
DTT^{red} [1eq.] DTT^{ox}





Cytotoxic activity study – results for *N*-allyl diselenide





Effect of N-substituted ebselen derivatives in DU 145 and PC-3 cancer cells, determined by SRB assay.
** $p < 0.001$, * $p < 0.01$ (significant differences versus control)

Summary

1. A series of *N*-alkyl benzisoselenazolones was obtained and transformed to corresponding diselenides

2. The antioxidant activity of all synthetized compounds was evaluated – best result was obtained for *N*-allyl diselenide

3. Anticancer potential of *N*-allyl diselenide was also tested and resulted in high antiproliferative potential against prostate cancer cell lines DU145 and PC3