SYNTHESIS AND BIOLOGICAL ACTIVITY OF NEW SELENOUREAS AND SELENOCARBAMATES

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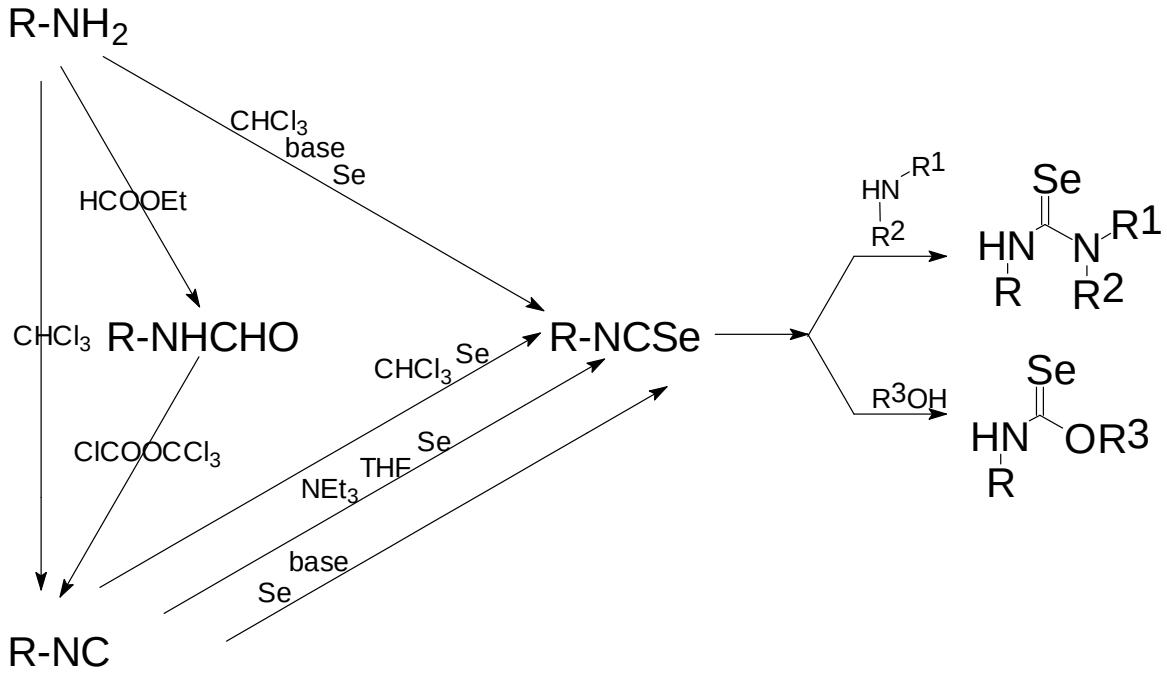
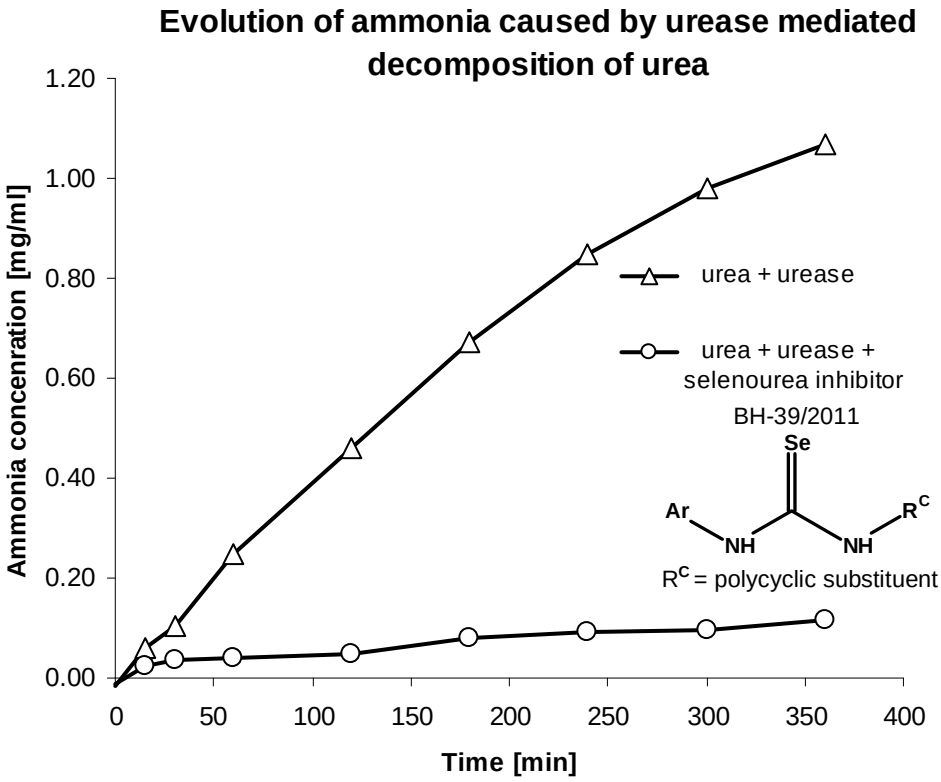
Isoselenocyanates, selenoureas and selenocarbamates **[1-3]** series were synthesized from corresponding amines (Scheme):



Scheme. Synthesis of isoselenocyanates, isoselenoureas and isoselenocarbamates

R, R^1, R^2, R^3 = Ar, alkyl, cycloalkyl, polycyclic, heterocycles (nitroxyl radicals).

The products were purified by means of column chromatography. Structures of the synthesized (non-radical) compounds were confirmed using spectroscopic methods, mass spectroscopy: MS/EI, MS/ESI, high resolution mass spectroscopy: HR/MS/EI, HR/MS/ESI, magnetic resonance spectroscopy: ^{1}H NMR,^{13}C NMR (including DEPT), ^{77}Se NMR and infrared spectroscopy: IR. The structure of nitroxyl radicals were confirmed using MS, HR/MS, and IR. Insecticidal, acaricidal, fungicidal and herbicidal properties of isoselenocyanates, selenoureas and selenocarbamates were tested. Some organoselenium derivatives showed strong fungicidal activity. The synthesized compounds were also tested as urease inhibitors **[4]**. A few of the organoselenium compounds have been shown to be potent urease inhibitors. The evolution of ammonia in the system urea/urease in the absence (the upper line) or in the presence (the lower line) of an exemplary selenourea inhibitor is shown in a figure below.



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References

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