6th Workshop of SeS Redox and Catalysis
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P15: Eco-friendly synthesis of $\beta$-hydroxyphenylselenides

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Constantly growing interest in the chemistry of organoselenium compounds is due to their biological activity, e.g. antioxidant properties affecting many common civilization diseases, applications in functional organic materials, as well as in food chemistry and applicability as reagents and catalysts in organic synthesis. Considering the significance of $\beta$-hydroxyphenylselenides, these compounds are valuable intermediates in the synthesis of allylic alcohols, olefins, epoxides and vinyl selenides. Therefore, the development of a new economical methods of their synthesis is particularly interesting.$^{1,2}$

Herein, we present the synthesis of $\beta$-hydroxyphenylselenides as a result of epoxide ring opening via three different methods. The first one was based on mechanochemical mixing of epoxides with PhSeZnSePh reagent. The next, a solvent-free approached including heating of benzeneselenol with epoxides at 90 °C. The last procedure was based on the reaction of epoxides and di(phenylselenyl)zinc in water. Selenium reagent PhSeZnSePh was prepared by the reaction of diphenyl diselenide and zinc dust, under ultrasound irradiation in the presence of THF and a catalytic amount of 10% HCl solution.$^3$ The control of the reaction condition by the addition of NaHCO$_3$ determines the stereochemistry of the obtained products.

![Scheme 1. Syntheses of β-hydroxyphenylselenides](image)

References