

New Seleno-Glyconjugates for Nutraceutical Application

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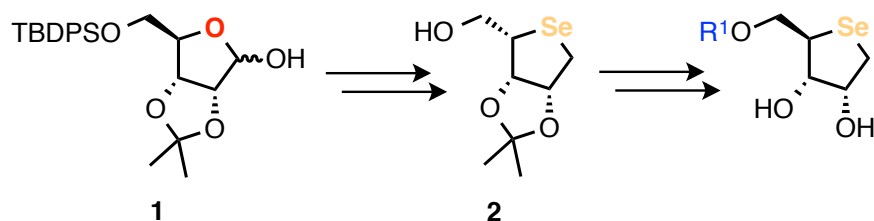
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Oxidative stress is a disequilibrium redox condition that occurs due to high concentration of pro-oxidant reactive species (RS) and, by comparison, a lower concentration of endogenous antioxidants in the body.¹ Oxidative stress, caused by RS, is involved into the genesis of different pathologies such as inflammatory bowel disease, cardiovascular disease, Alzheimer's disease, diabetes and cancer.² Nutraceuticals could be used to prevent oxidative stress as an additional health benefit along with nutrition.¹ The use of exogenous antioxidants can ameliorate this stressful condition and restore the redox disequilibrium.³ Polyphenols have a potential health-promoting effect, however, show a low bioavailability.⁴ For this reason, synthesis of organic selenium-compounds combined to (poly)phenolic compounds could increase the solubility and exert their potential synergistic antioxidant effects.

The approach proposed consists of preparing the D-ribose derivative **1** to obtain the donor **2** then employed to produce glycoconjugates containing well known (poly)phenols through a Mitsunobu reaction.⁵



R¹ = Polyphenolic unit

To assess the bioactivity of selenoglycoconjugates, DPPH and ABTS antiradical assays were performed, while the effects on cell proliferation were preliminarily investigated on SH-SY5Y cells. The phenol moiety greatly affected both the antiradical efficacy and the mitochondrial redox activity. The glycoconjugates, especially at the highest tested concentrations, exhibited cytotoxic effects lower than that of unconjugated phenolic compounds, underlining the mitigating impact of selenosugar.

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