

BIOPROCESSING OF NATURAL PRODUCTS WITH GLYCOSIDASES

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Numbers of biologically active natural products are glycosides. Often, the glycosidic residue is crucial for their activity, in other cases glycosylation only improves pharmacokinetic parameters.^{1,2} Recent developments in molecular glycobiology brought better understanding to the aglycone vs. glycoside activities.³ Enzymatic modification of these glycosides - both extension of the glycoside moiety and its selective trimming - is advantageous due to selectivity and mildness of the reaction conditions in presence of reactive and sensitive, complex aglycones. Moreover, enzymatic reactions enable to use resulting products as "natural products", e.g. in nutraceuticals.⁴

Selective trimming by glycosidases will be demonstrated on the large-scale production of the high-value nutraceutical flavonoid quercetin-3- β -D-glucopyranoside (isoquercitrin) from rutin by using α -L-rhamnosidase. Resulting compound is valuable antioxidant and antiallergic substance void of potential toxicity of quercetin.

Second approach, e.g. extension of the existing glycoside by the enzymatic action will be demonstrated on the example of flavonolignan silybin glycosides generating thus substances with improved pharmacokinetic parameters and with specific targeting to the liver tissue. Silybin and its derivatives experience now a boom both in science (over 100 papers/y.) and in novel medicinal applications as, e. g., prostate cancer treatment, liver regeneration and some others.⁶

Acknowledgements

This work was supported by the grants from the Czech Ministry of Education LC06010, OC08049 and Czech Science Foundation GA303/08/0658.

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