

Enzymes in Biotransformation: Overview and Outlook

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This presentation will introduce some currently used enzyme-based biotransformation reactions, focused on oxidoreductases, which play a major role in modern production processes such as sterol transformation, generation of chiral compounds, biofuel and other value-added products. Moreover, strategies to implement new processes will be discussed, such as combining existing enzymes to larger synthetic pathways, establishing whole-cell systems by introducing recombinant proteins (Fig. 1), uses of rational mutagenesis or directed evolution and exploring the use of unusual novel enzymes from the microbial diversity for special purposes. Some examples of potentially useful enzymes will be introduced that are still underrepresented in industrial applications.

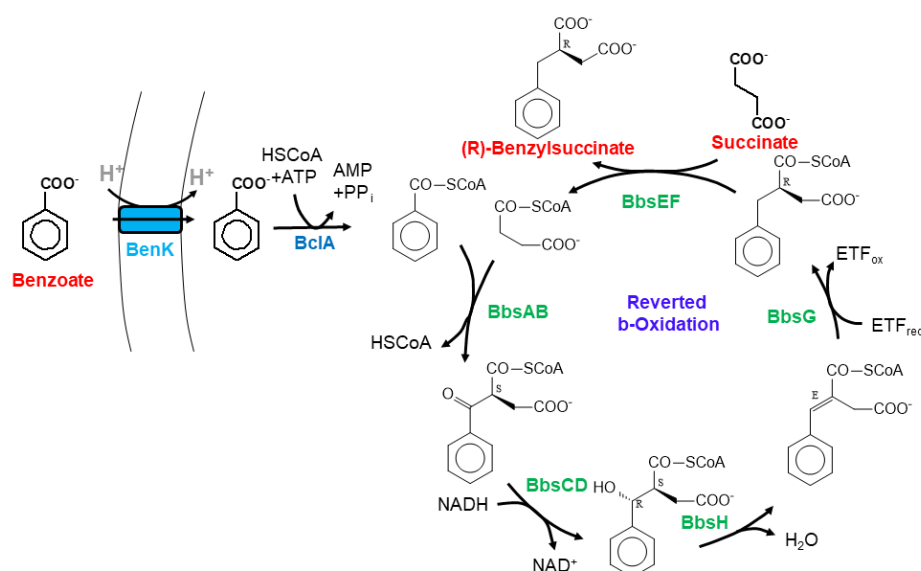


Figure 1. Whole-cell system of benzylsuccinate production. Benzoate is supplied to an anaerobic culture of recombinant *E. coli* carrying the genes for a benzoate transporter, a benzoate CoA ligase and the enzymes of benzylsuccinate degradation to benzoyl-CoA. Together with succinate produced from fermentation of glucose, benzoate is transformed to benzylsuccinate via the reverse-acting degradation enzymes [1].

References

- [1] J. Mock, K. Schühle, U. Linne, M. Mock, J. Heider, *Molecules*, 29, (2024), 415; DOI: 10.3390/molecules29020415

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