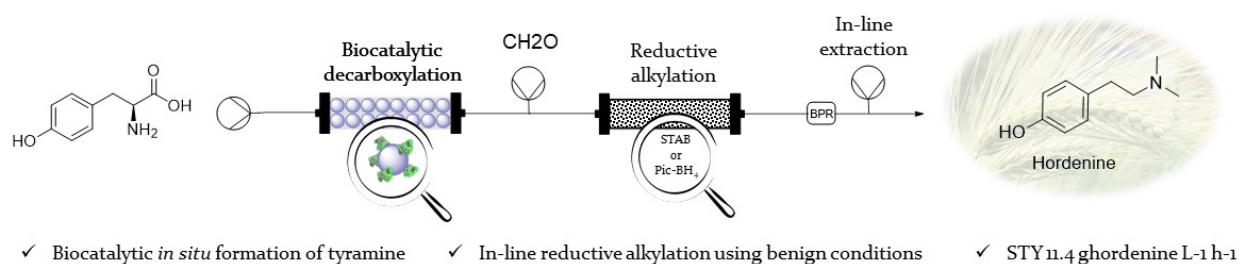


Combined chemoenzymatic strategy for sustainable continuous synthesis of the natural product hordenine

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To improve sustainability, safety and cost-efficiency of synthetic methodologies, biocatalysis can be a helpful ally. In this work, a novel chemoenzymatic strategy ensures the rapid synthesis of hordenine, a valuable phenolic phytochemical under mild working conditions. In a two-step cascade, the immobilized tyrosine decarboxylase from *Lactobacillus brevis* (LbTDC) is here coupled with the chemical reductive amination of tyramine. Starting from the abundant and cost-effective amino acid L-tyrosine, the complete conversion to hordenine is achieved in less than 5 minutes residence time in a fully-automated continuous flow system. Compared to the metal-catalyzed N,N-dimethylation of tyramine, this biocatalytic approach reduces the process environmental impact and improves its STY to 2.68 g L⁻¹ h⁻¹.



[1] S. Gianolio, *Green Chemistry*, **2022**, *24*, 8434 - 8440.