catalysts

MDPI

Supporting Information

A multi-enzyme cascade for the production of high value aromatic compounds

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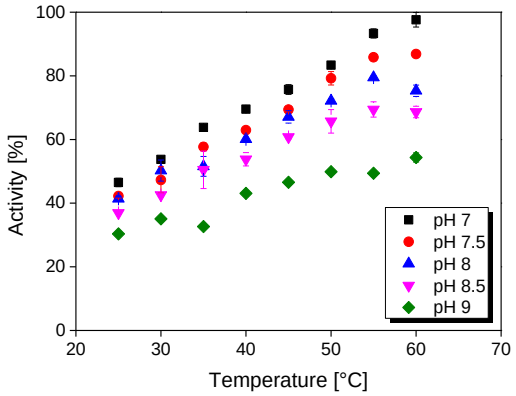
Enzyme choice

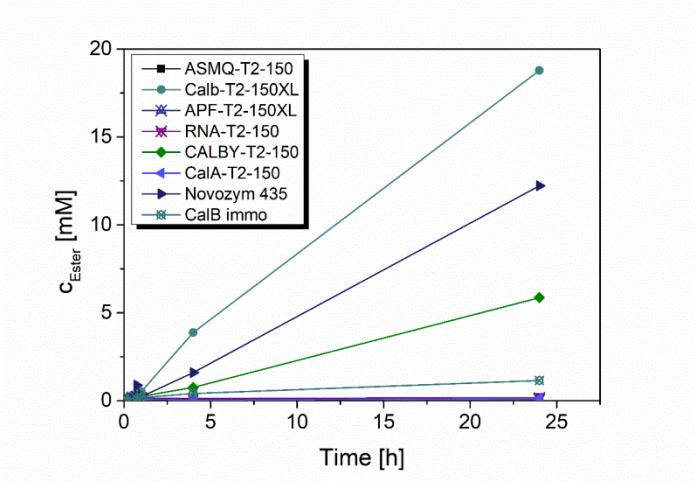
The activity of the different ADHs and the pH and temperature screening were determined *via* initial reaction rate measurements.

No.	Enzyme	$Activity_{Aldeyhde}$	$Activity_{Alcohol}$
1	ADH-39L	0.616 U/mg	0.021 U/mg
2	ADH-80	/	/
3	ADH-99L	/	/
4	ADH-125	/	/
5	ADH-168	0.624 U/mg	0.082 U/mg
6	ADH-97L	0.953 U/mg	0.030 U/mg



Cond.: *Left*: c = 20 mM (5% DMSO), Tris/HCl buffer (pH 8, 0.1 M), c_{NAD+} = 0.05, λ = 340 nm, T = 30 °C.
Right: Tris/HCl buffer (pH 8, 0.1 M), c = 5 mM , c_{NADH} = 0.05 mM, λ = 340 nm, T = 30 °C.

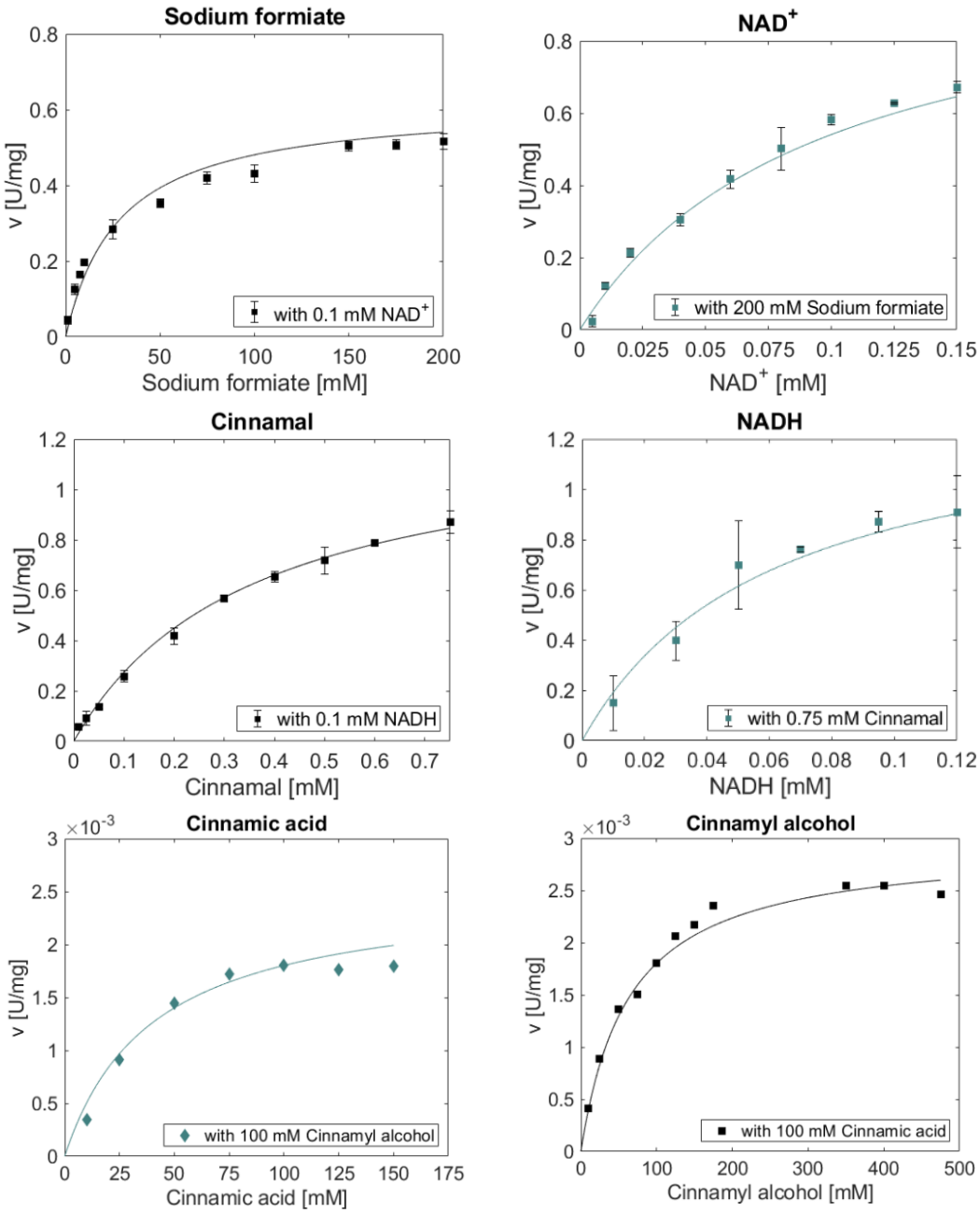
The different lipases from were screened batchwise in 1 mL in a tempered shaker and the reaction solution was analyzed via gas chromatography.



Cond.: V_{CPME} = 1 mL, $c_{Acid/Alcohol}$ = 100 mM, m_{Lipase} = 5 mg, T = 50 °C.

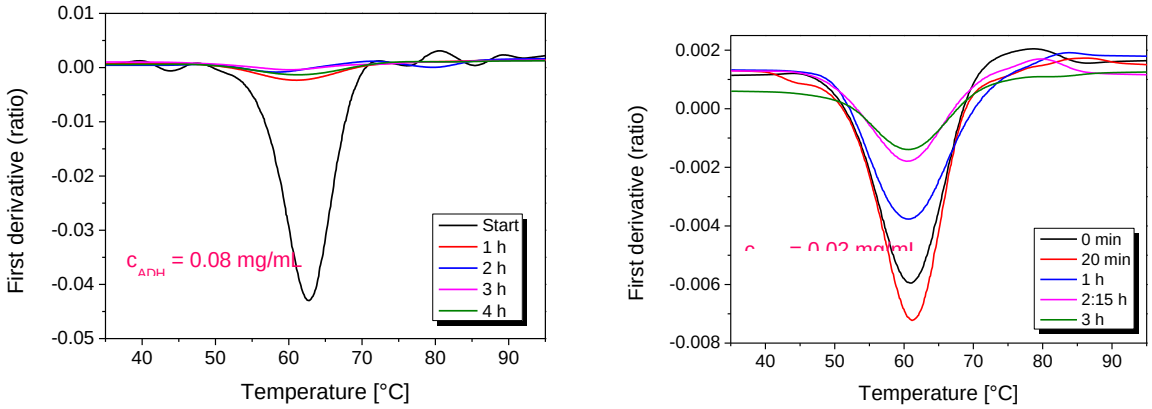
Kinetics

The kinetics were investigated as described in the manuscript.



Differential scanning fluorimetry

Measurement of protein stability by differential scanning fluorimetry as described in the manuscript. The plots show the reaction progress of the in situ co-factor regeneration depending on the ADH concentration.



Cond.: Potassium phosphate buffer pH 8, 0.1 M, V = 25 mL, $c_{Aldehyde}$ = 7.5 mM, c_{NADH} = 0.15 mM, m_{ADH} = 0.08/0.02 mg, m_{FDH} = 5 mg, $c_{sodium\ formate}$ = 100 mM, 30 °C.