

BIOCATALYTIC OXIDATIONS REACTIONS OF PRIMARY AND SECONDARY ALCOHOLS: A GREENER METHOD

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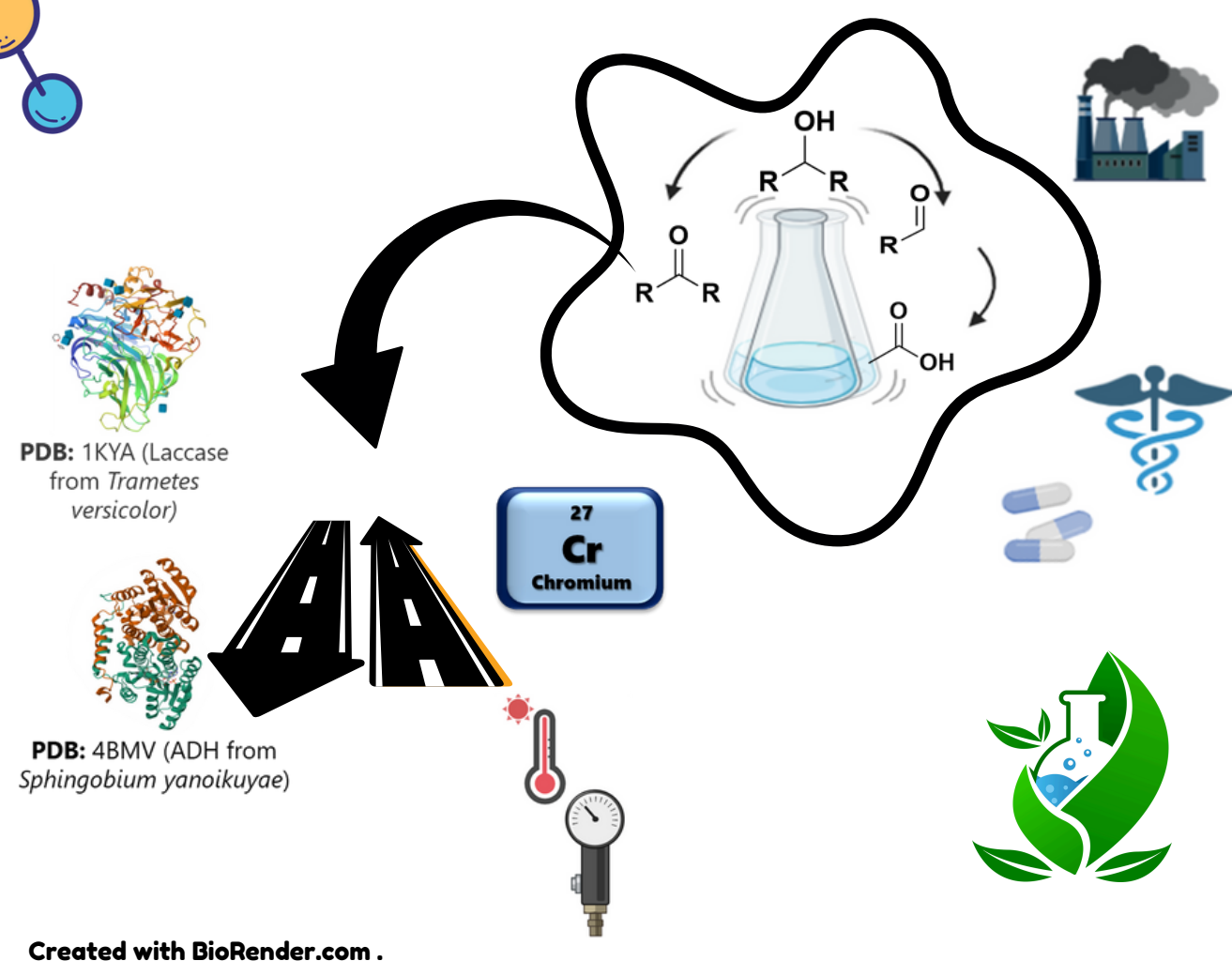
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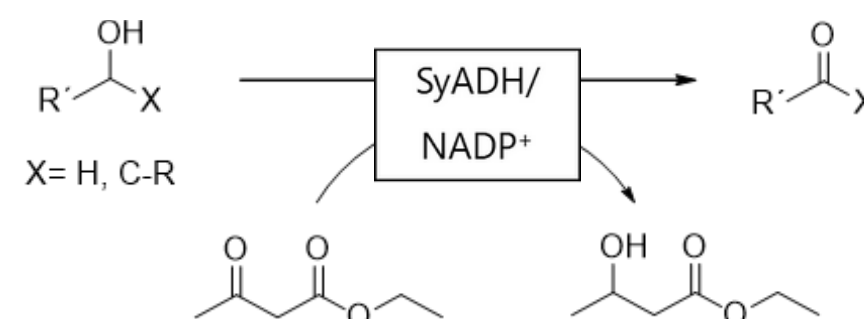
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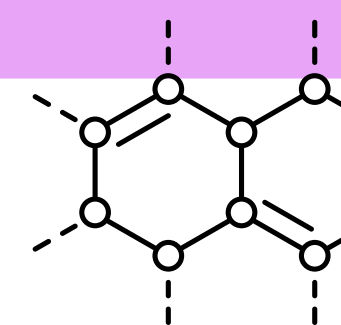
Introduction



Results



Substrate	C(%)
	n.a
	n.a
	n.a
	19%
	25%
	2%
	4%



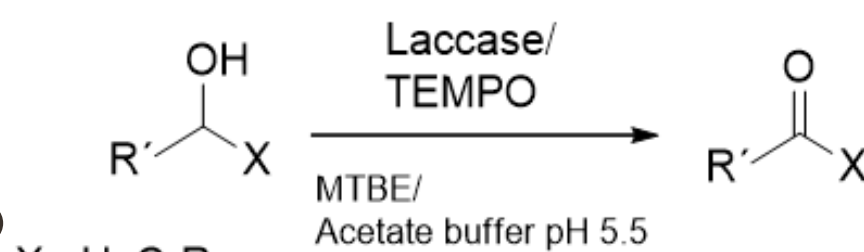
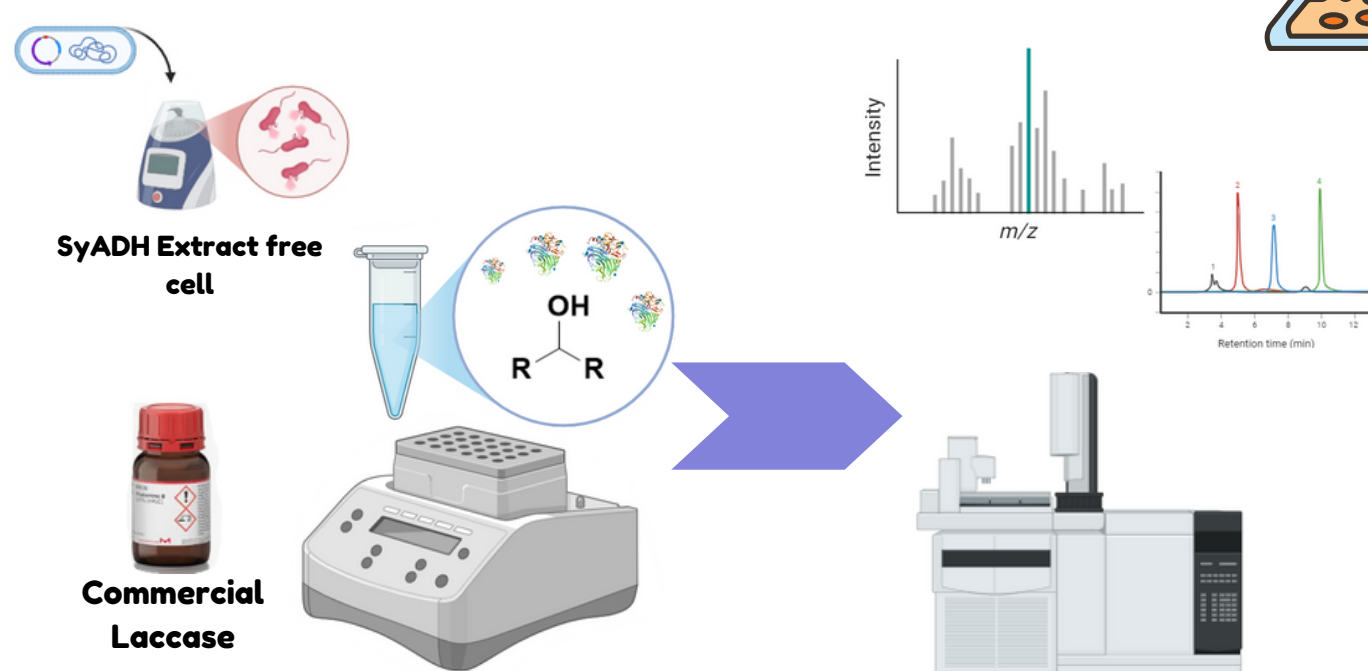
Only the secondary alcohols was oxidised

Reactions conditions: [NADP+]=1mM, phosphate buffer pH7 (50mM), [Substrate]=138,2 μmol, [ethyl acetoacetate]= 207,3 μmol, 1,5 eq. Total volume: 600 μL, T= 30°C, reaction time 24h, 600 rpm.

Objective

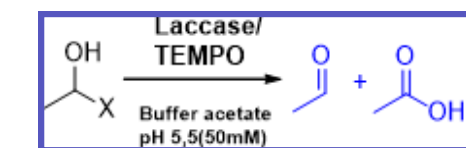
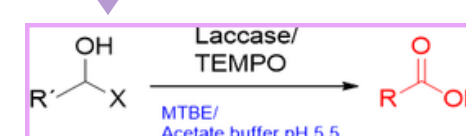
We aim to explore two potential enzymes for the oxidation of both primary and secondary alcohols: a recombinant enzyme *Spingobium yanoikuyae* alcohol dehydrogenase (SyADH), as well as commercial laccase from *Trametes versicolor*

Methods



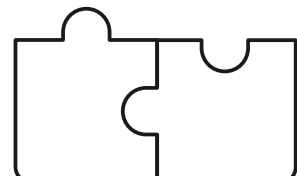
Substrate	C(%)
	99%
	3%
	5%
	3%
	6%
	3,5%

Reactions conditions: [Substrate]= 80 μmol, [TEMPO] = 4,5mg, [Laccase] = 7,5mg, acetate buffer pH 5,5 (50mM), reaction time 24h, 600 rpm, T= 30°C. Total volume: 2000μL, buffer/co-solvent MTBE ratio 1:1.

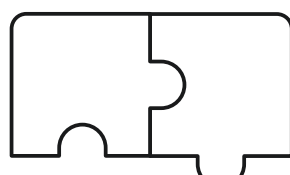


Conclusion

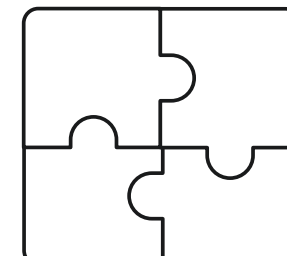
Laccase was more selective for primary alcohols



SyADH was selective towards secondary alcohols



Enzymatic reactions offer an effective alternative to conventional methods



References

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3. HENDRIK PUETZ, H.; PUCHLOVÁ, E.; HOLLMANN, F. Biocatalytic Oxidation of Alcohols. *Catalysts.* 952, 10(9), (2020).

Acknowledgements



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Professor Dr. Hollmann, TU DELFT- The Netherlands