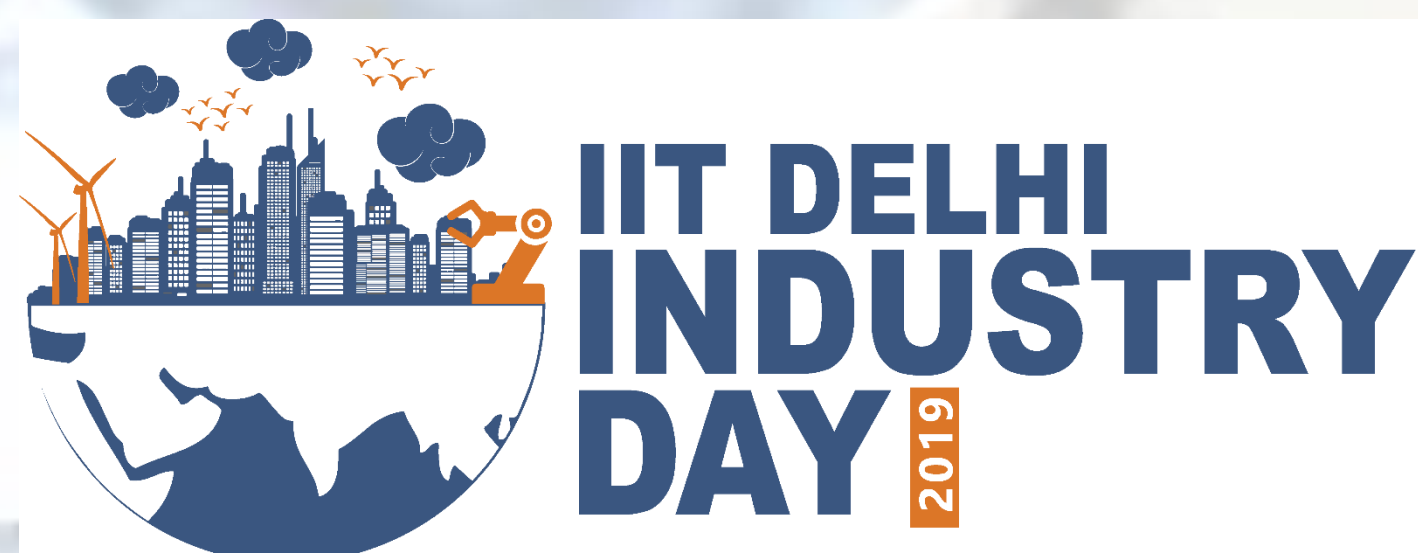


Industry Day Theme #Clean Energy for sustainable Economy and Environment



Biological production of 6-amyl- α -pyrone and its Catalytic Transformation into Flavour and Fragrance Ingredients

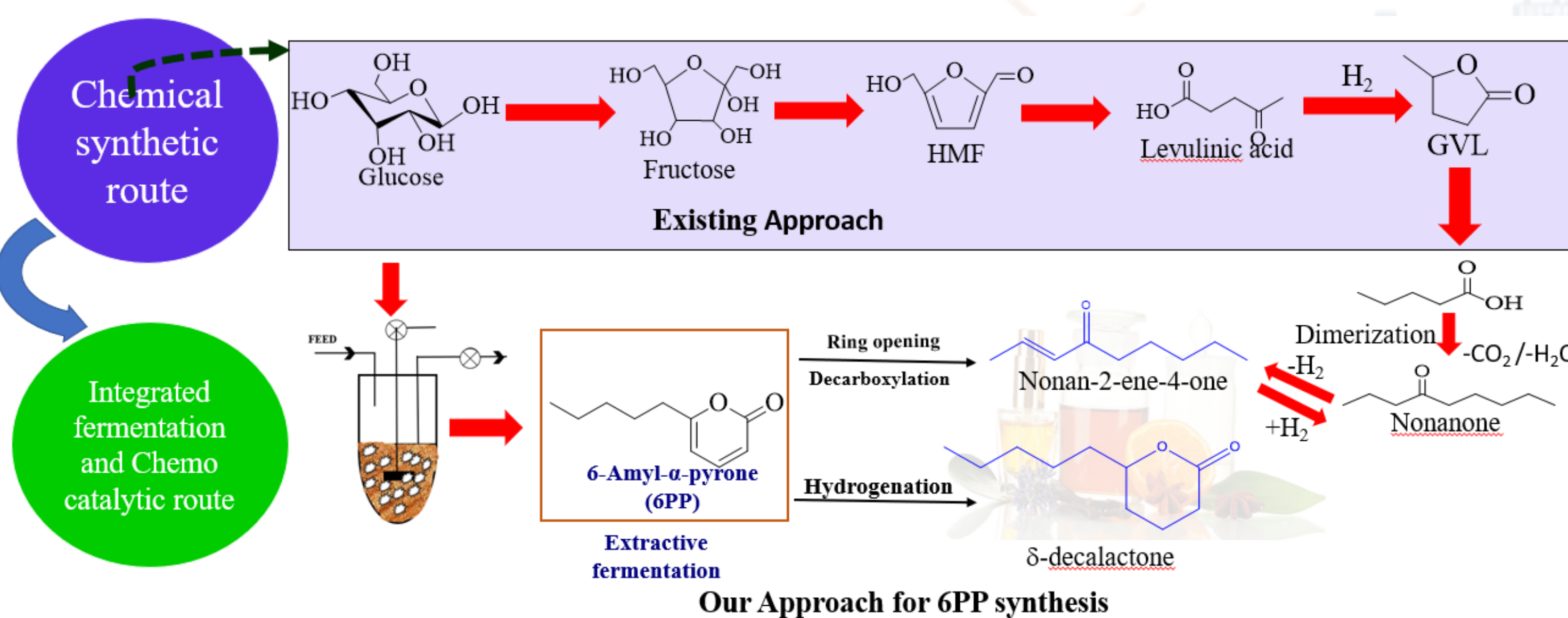
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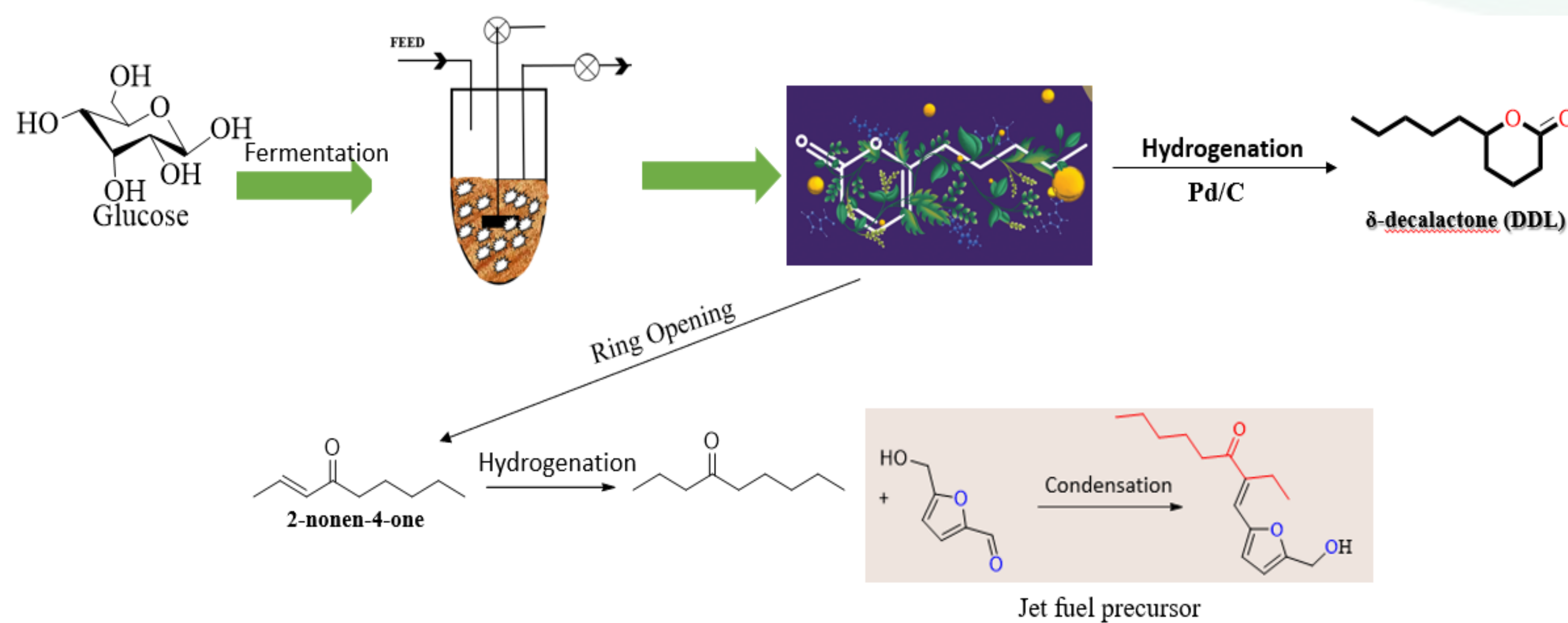
Abstract

- Novel biomass-derived Platform molecule was developed as a precursor to produce fuels, food additives, polymers and pharmaceuticals.
- The proposed molecule, 6-amyl- α -pyrone (6PP) is a C_{10} which is obtained from fermentation of biomass.
- Biologically produced 6PP is valorised via chemical transformation routes into δ -decalactone and C_9 ketone which has direct application in food industries.
- The overall process involves integration of bio and chemo catalytic reactions.

Introduction



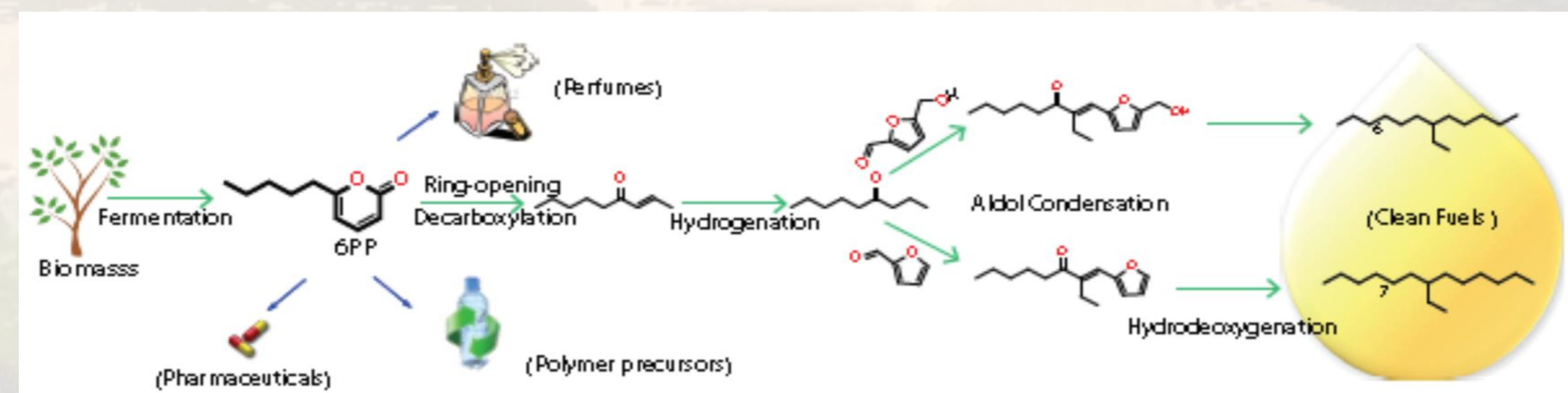
Materials and Methods



Conclusions

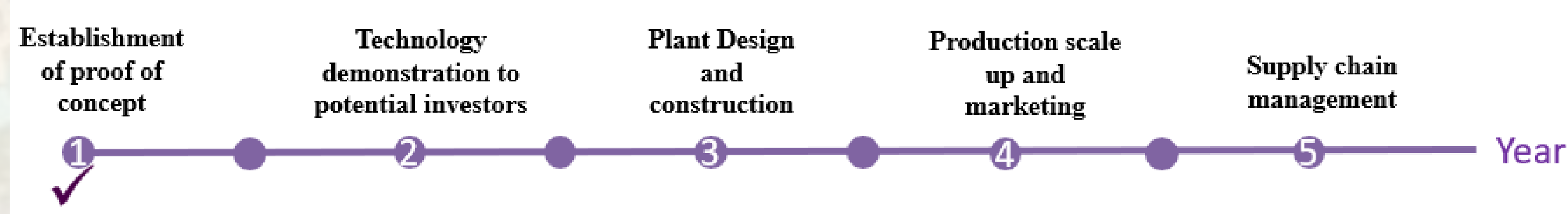
- Hexadecane has been selected as good and bio-compatible organic solvent for extractive fermentation
- Maximum 6PP (purity 65%) titer obtained through extractive fermentation is 724 mg/L in aqueous two-phase systems.
- 97.8% of 6PP is converted into 2-Non-en-4-one obtained upon ring opening and decarboxylation in presence of water-THF as solvent
- 79% 6PP converted into DDL over Pd/C as catalyst in presence of formic acid as *insitu* hydrogen source

Industrial Significance

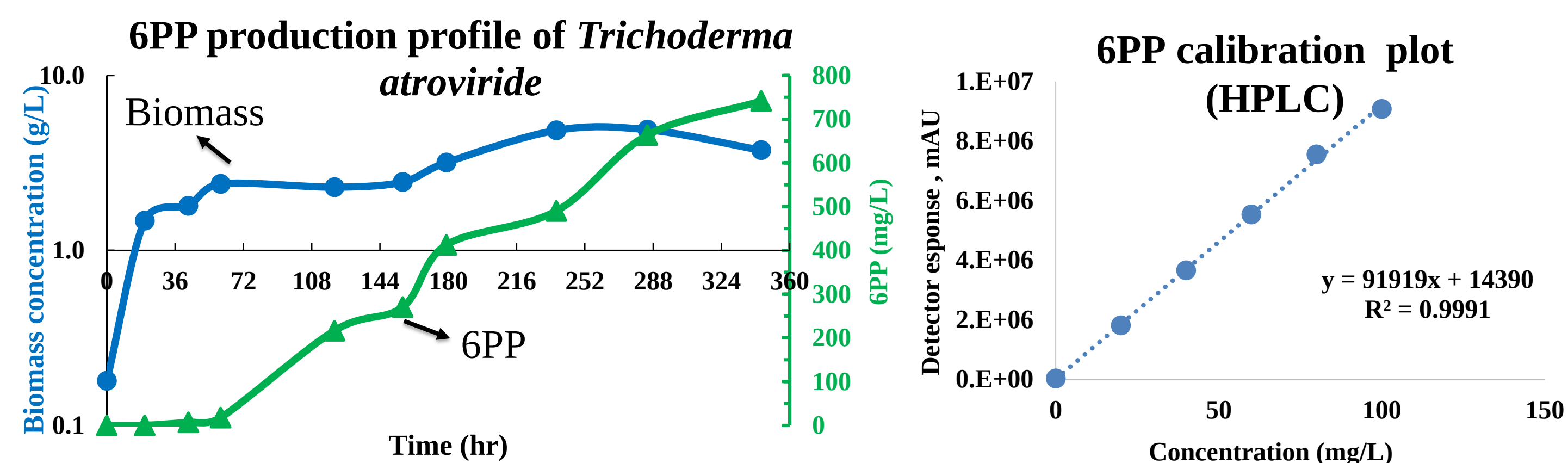


Technology Readiness Level

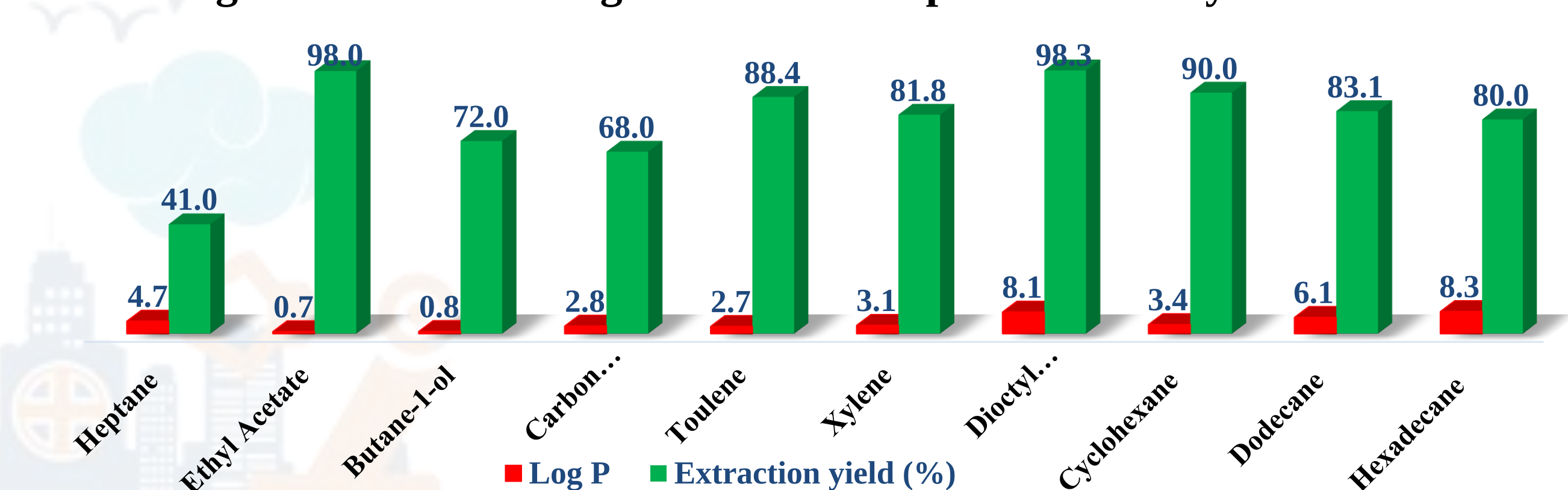
5year road map



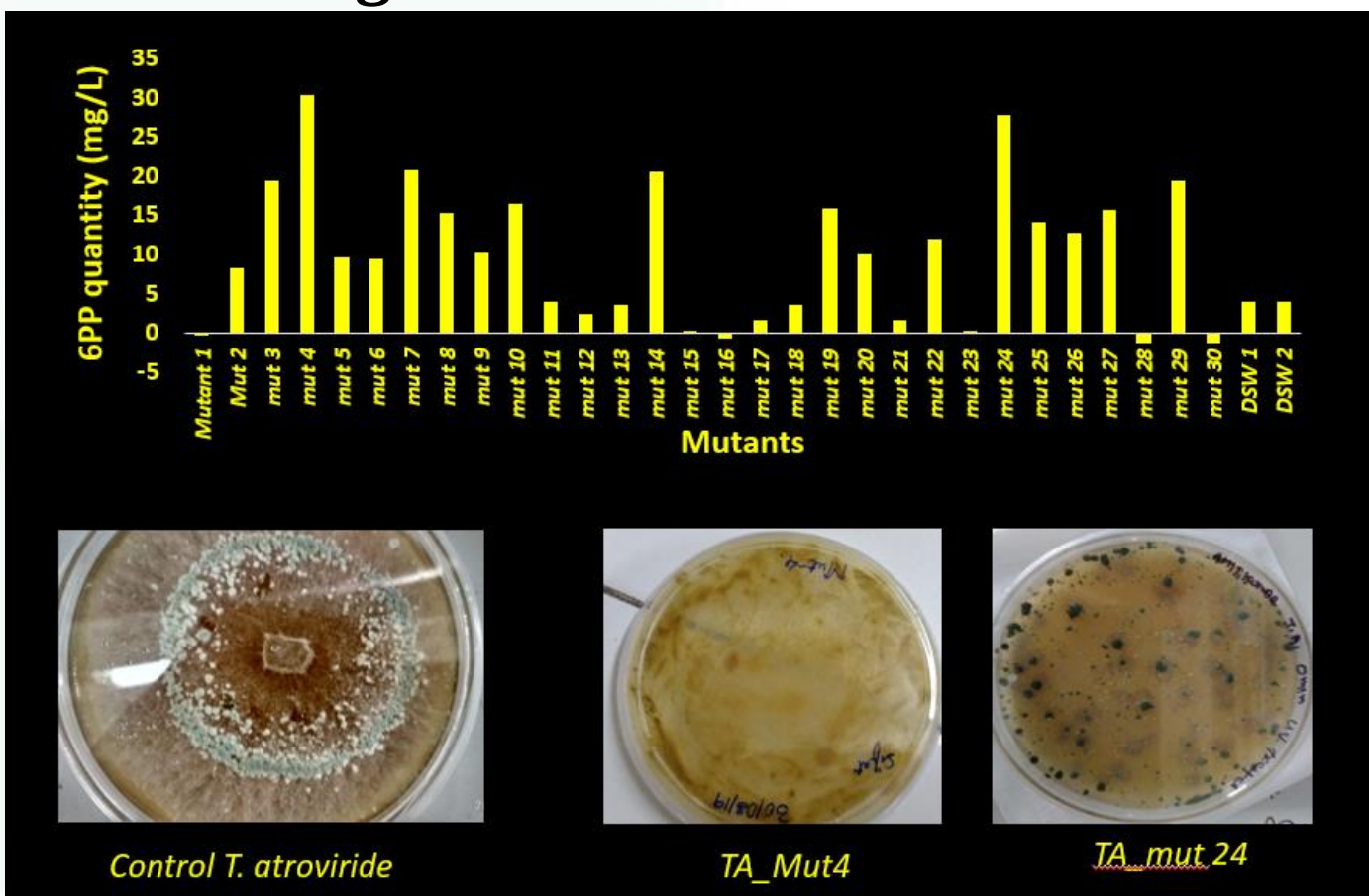
Results



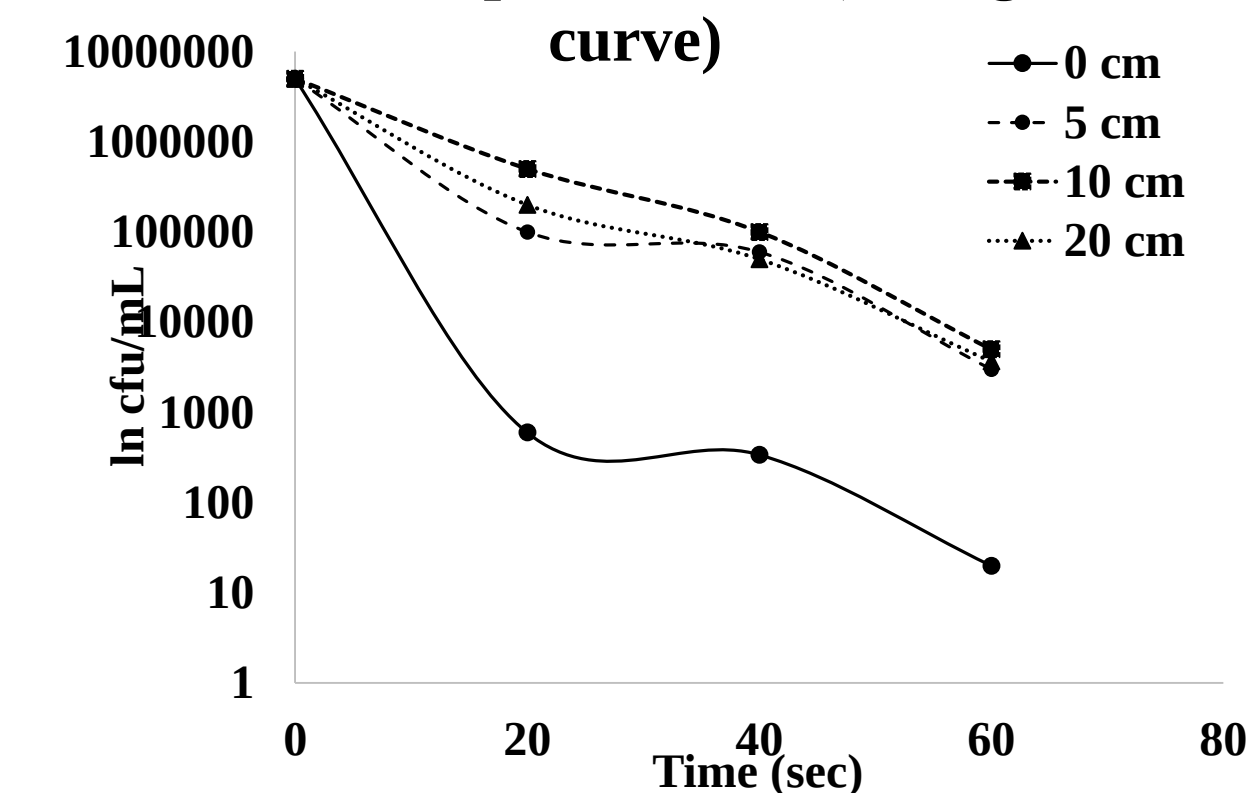
Screening and selection of organic solvents to produce 6PP by extractive fermentation



Screening and selection of UV mutants

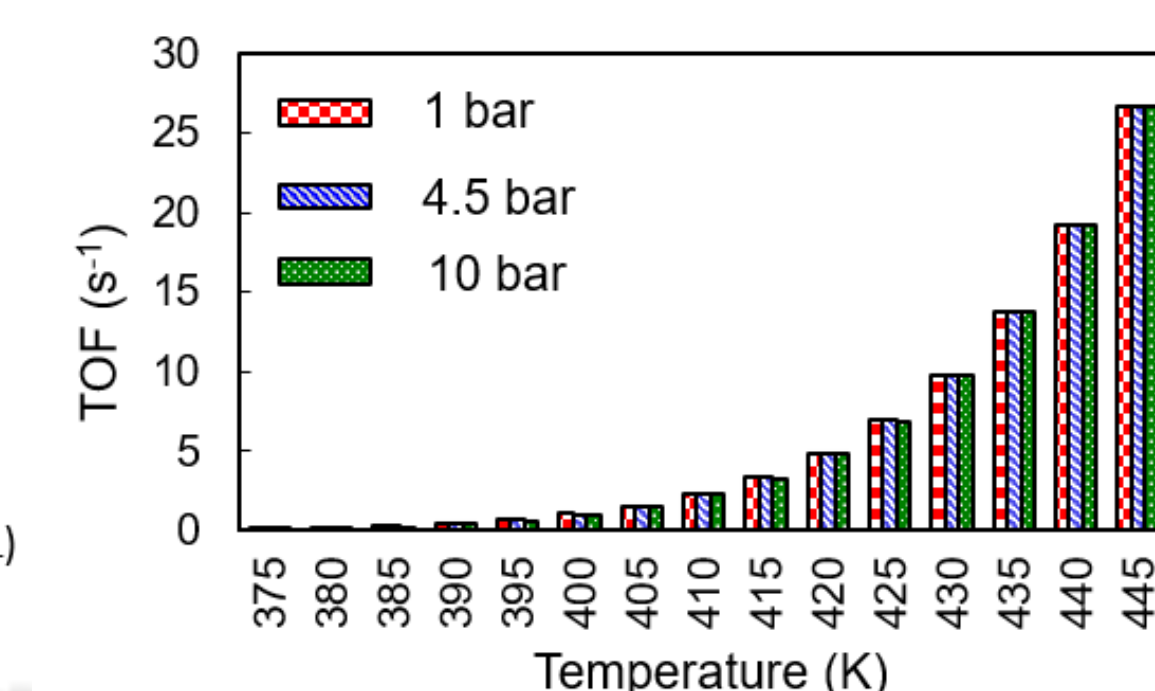
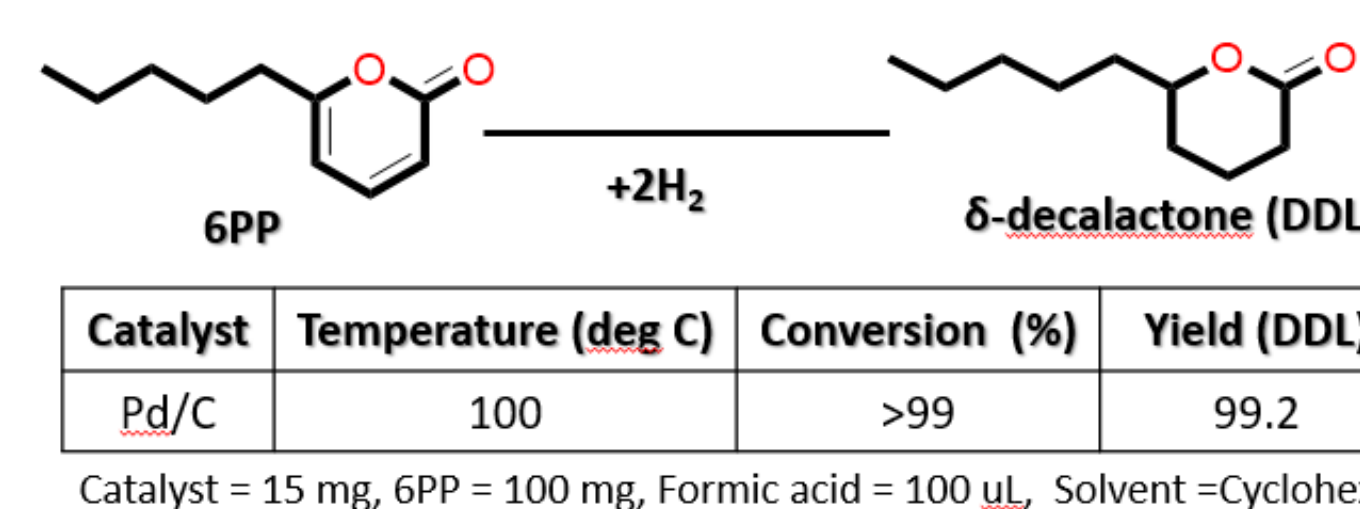


Dose-response curve (killing curve)

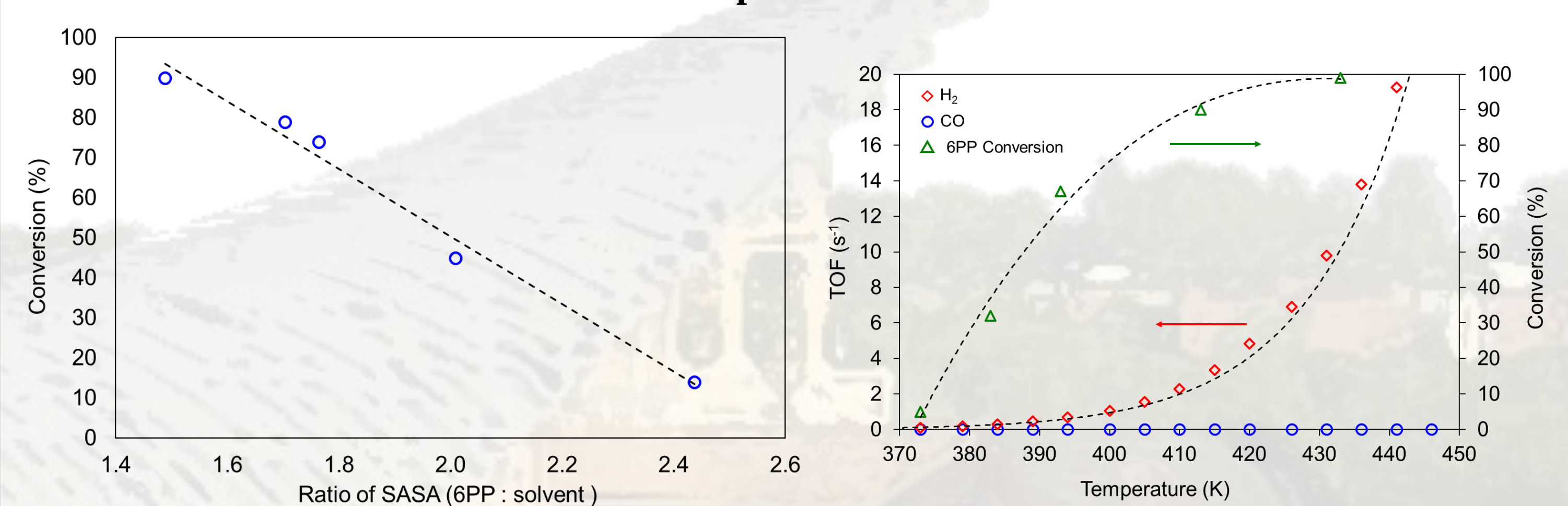


Conversion of 6PP into nonan-2-ene-4-one

6PP	Water-THF	473/10	Silica-alumina	99	65
6PP	Water-THF	498/8	-	95	58



δ -decalactone production from 6PP



References

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Acknowledgement

