

MCA green

Coproduction of monochloroacetic acid and energy carriers from biomass

TKI BBEG Innovation project

April 2017 - December 2018



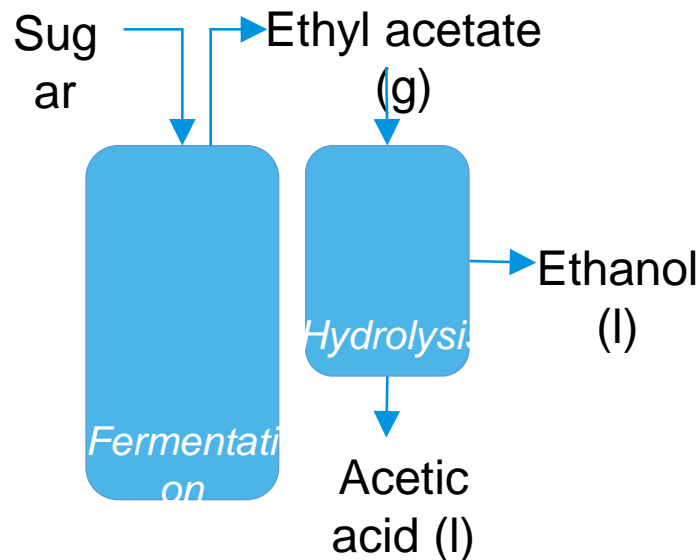
Towards green MCA

- Monochloroacetic acid (MCA): 700 kton/yr
- Used in agricultural chemicals, consumer goods, personal care, etc
- AkzoNobel is market leader
- Produced from fossil-derived acetic acid (20,000 kton/yr)
- “Planet Possible”: AkzoNobel has need for biobased acetic acid

Biobased acetic acid

- Main challenges current fermentation methods (vinegar, homoacetate):
 - Acetic acid toxicity
 - Recovery of acetic acid from watery fermentation broth
- Solution by Wageningen UR:
 - Convert sugar into ethyl acetate
 - High volatility: product recovery in gas phase
 - Chemically convert ethyl acetate into acetic acid and ethanol

Acetic acid and Ethanol via Ethyl acetate



Advantages:

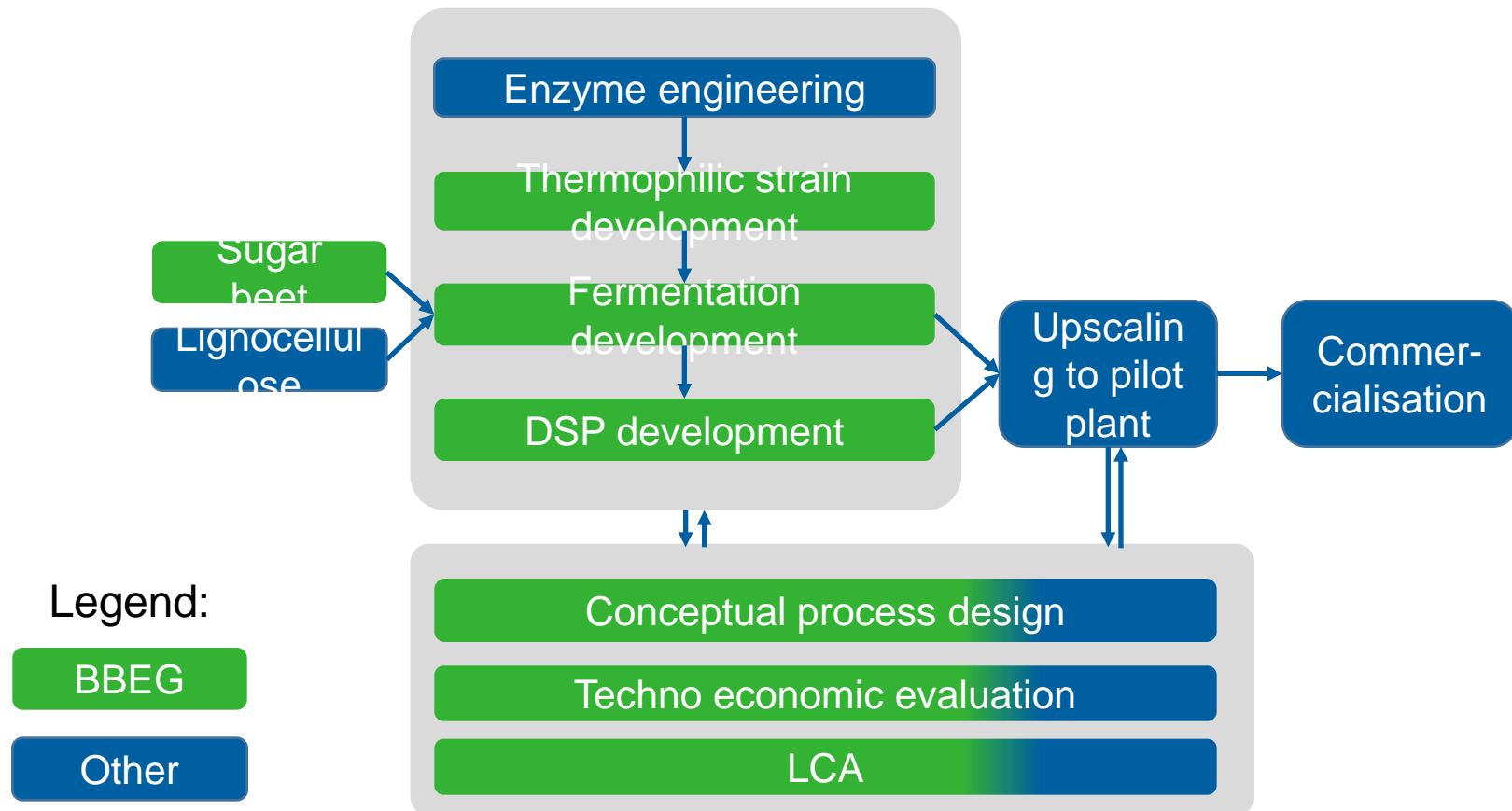
- Easier DSP
- Glacial acetic acid as product
- Ethanol as product (energy carrier)
- No product accumulation in broth

Ethyl acetate production

- AkzoNobel & Wageningen UR
- Conceptual process design / economic evaluation: Go!
- New enzyme family discovered that converts acetyl-CoA and ethanol in ethyl acetate
- New enzymes allows ethyl acetate production in yeast and *E. coli*
- Patent pending



R&D programme: to commercial application



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