

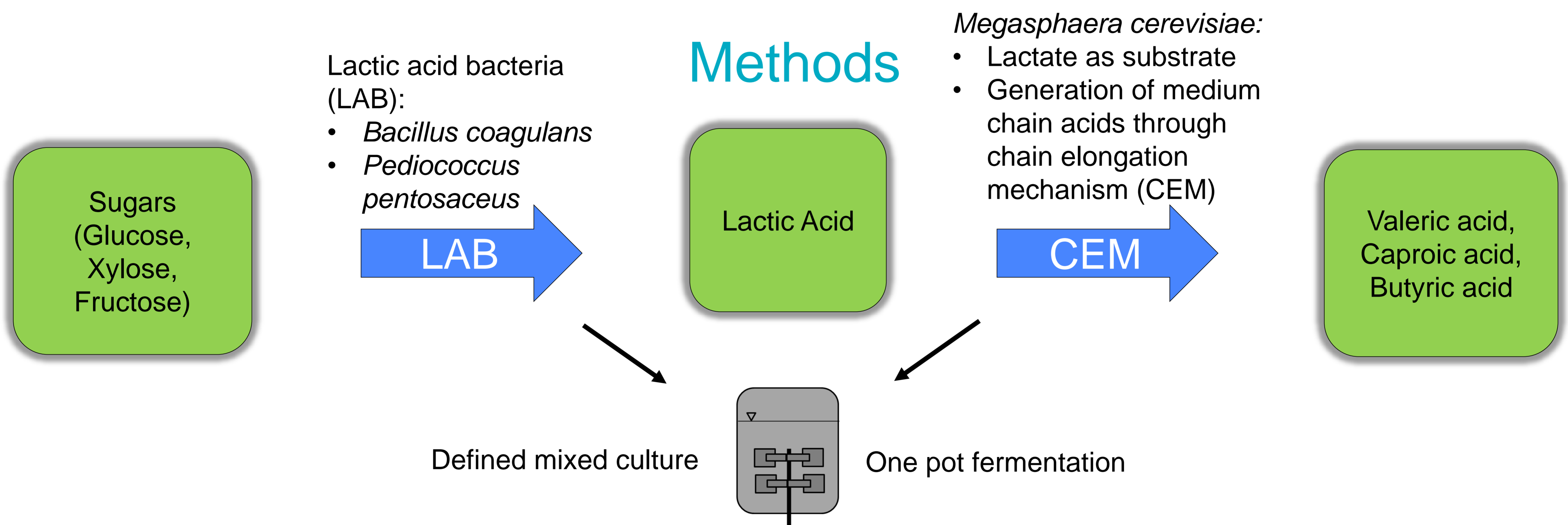
Production of valeric and caproic acids from biomass residues

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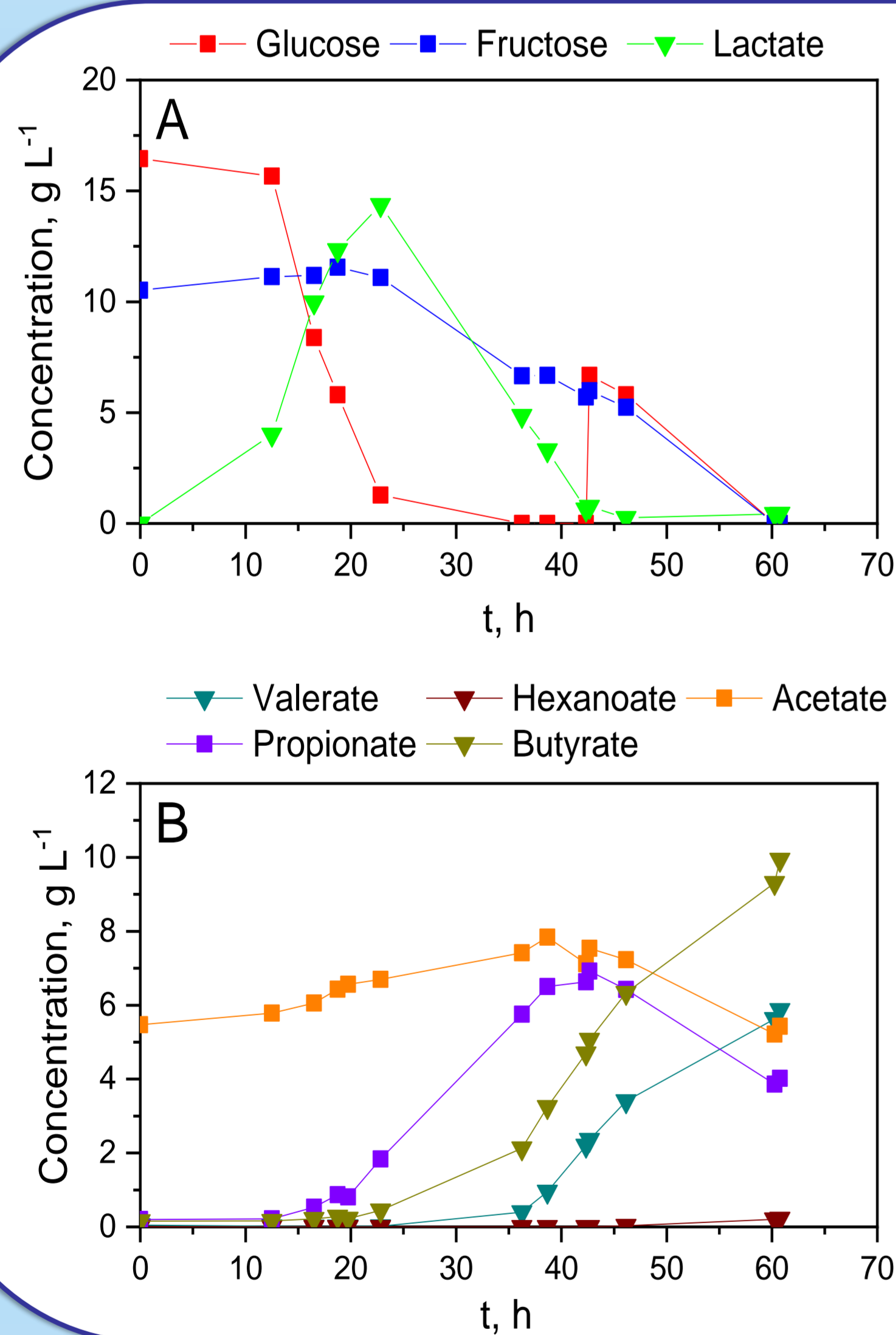
Objectives

Valeric acid (VA) and caproic acid (CA) are valuable organic acids which are currently only produced via petrochemistry. The goal is to establish a sustainable process starting from industrial streams consisting of biomass residues. As possible raw materials hydrolyzed cabbage leaves and lignocellulosic residues were tested as substrates for a defined mixed culture.

Methods

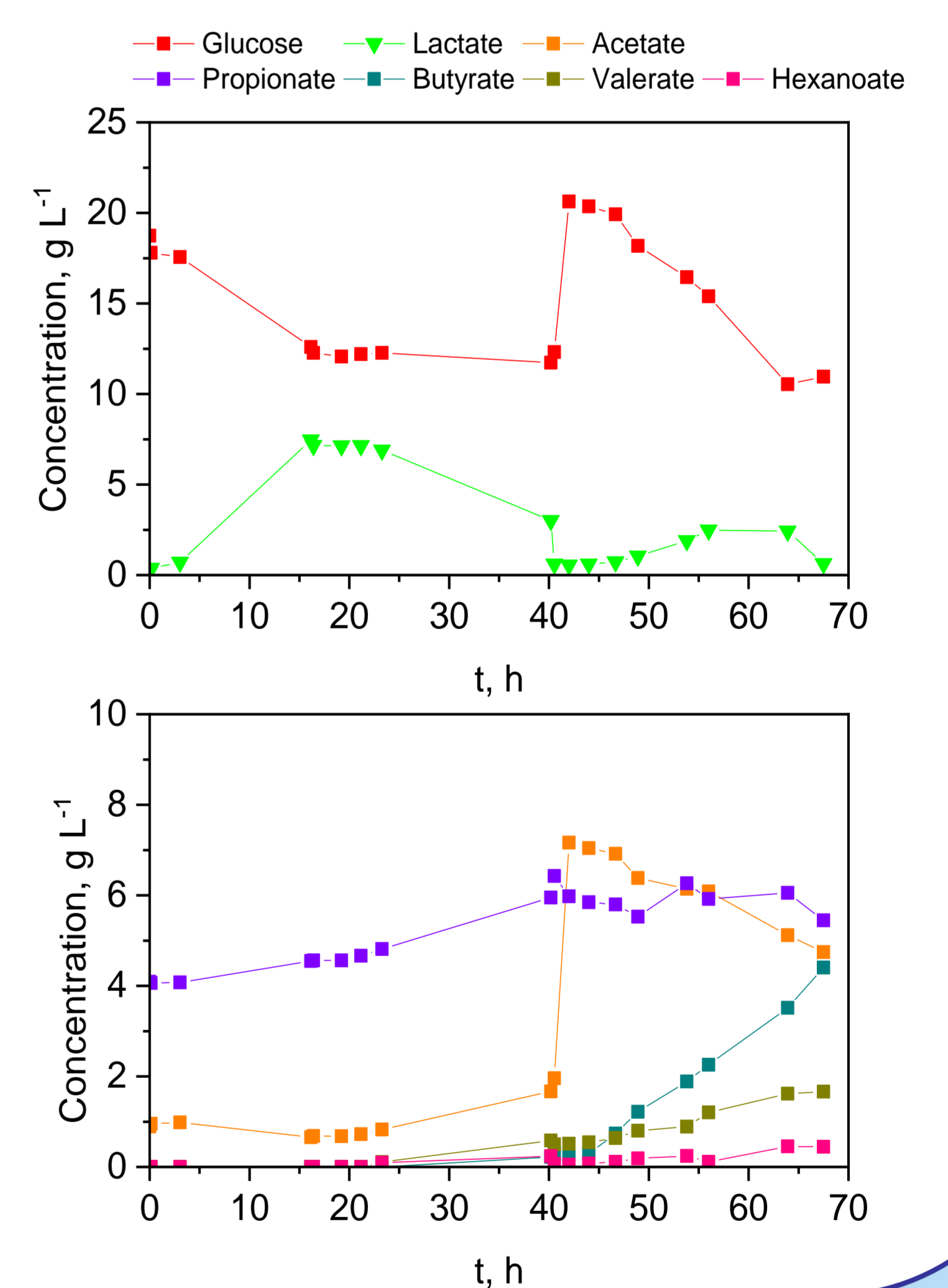


Results & Discussion



- Mixed culture of *P. pentosaceus* & *M. cerevisiae*
- Glucose preferred substrate compared to fructose (from hydrolyzed leaves)
- Acetic acid as electron acceptor (more even-numbered acids)
- Caproic acid: 0.23 g L⁻¹
- Valeric acid: 5.87 g L⁻¹
- Butyric acid: 10.1 g L⁻¹

- Mixed culture of *B. coagulans* & *M. cerevisiae*
- Glucose from lignocellulosic residues
- Acetic and propionic acid serve as electron acceptor and improve growth (even and odd-numbered acids)
- Caproic acid: 0.45 g L⁻¹
- Valeric acid: 1.67 g L⁻¹
- Butyric acid: 4.4 g L⁻¹



Conclusion & Outlook

- Successful demonstration of producing valeric and caproic acid from low-grade biomass residues via lactate as an intermediate substrate
- Possible to combine LAB with other lactate consuming bacteria to broaden and diversify product spectrum
- But: Cost-efficient and easy-to-use downstream processing techniques for separation of a mixture of organic acids have to be developed

Contact

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