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Universiteit Leiden



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Title: Unraveling substrate dynamics and identifying inhibitors in hydrolysates of lignocellulosic biomass by exometabolomics

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Propositions

Belonging to thesis

‘Unraveling Substrate Dynamics and Identifying Inhibitors in Hydrolysates of Lignocellulosic Biomass by Exometabolomics’

1. A proper pretreatment method for lignocellulosic biomass finds its balance between severity and mildness.
This thesis, Chapter 2
2. It is difficult to precisely define a compound as an inhibitor in lignocellulosic biomass hydrolysates, since its dynamics during fermentation, its concentration and potential synergic effects are mutually influencing the overall fermentability.
This thesis, Chapter 5
3. Novel analytic-chemical methods, such as HPAEC-MS, are needed to ultimately improve pretreatment methods and thus hydrolysis efficiency of lignocellulosic biomass.
This thesis, Chapter 3
4. When determining if the detoxification of lignocellulosic biomass hydrolysates is sufficient, the fermentation efficiency of both glucose and xylose should be tested. Not only because xylose is an abundant sugar form in biomass hydrolysates, but also because during xylose fermentation, microorganisms seem to be less resistant to the inhibitors in biomass hydrolysates.
This thesis, Chapter 6
5. Biofuel is favored not because it is inexpensive at this moment, but because it is fashionable and will probably become economical in the future.
6. Of the ‘omics’ tools, metabolomics is the most comprehensive, dealing with aspects of biology, analytical chemistry and statistics.

7. Baker's yeast, the organism that has prepared our daily bread for centuries, is now attempting to prepare our vehicles' bread: bioethanol.
8. The biotechnological version of unlimited resources may become within reach: microorganisms that use CO₂ as carbon source and N₂ as nitrogen source to produce value added products.
9. Intercultural marriages are as difficult as and as easy as intracultural marriages, what matters is the individual differences.
10. The reason why Dutch people like to talk about weather and Chinese like to talk about food is the same: variation.

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