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BIOPROCESS DESIGN FOR *AGAVE* RESIDUE VALORIZATION TO PRODUCE CHEMICAL BUILDING BLOCKS

Design d'un bioprocédé pour la valorisation de résidus d'agave pour le développement des molécules synton

The aim of this thesis work is to implement a mixed fermentation of two microorganisms to ferment lignocellulosic hydrolysates into platform chemicals.

One of the challenges of lignocellulose fermentation is the presence of sugar mixture (mainly C6 glucose and C5 xylose) released during the pretreatment and hydrolysis of lignocellulosic materials. Our strategy was at first, to find a couple of microorganisms in which each one is able to metabolize one of the sugars. Based on a literature review the target metabolites chosen were xylitol from xylose and lactic acid from glucose. For each metabolite, one strain has been selected based on yield, productivity and its ability to be cultivated in compatible fermentation conditions with the other. The selected strains *Candida guillermondii* and *Corynebacterium glutamicum* were chosen.

After several test on single fermentation conditions, the production yield of each metabolite was optimized. To propose an optimal co fermentation process, experiments on sequential and mix fermentation are tested (Figure1).

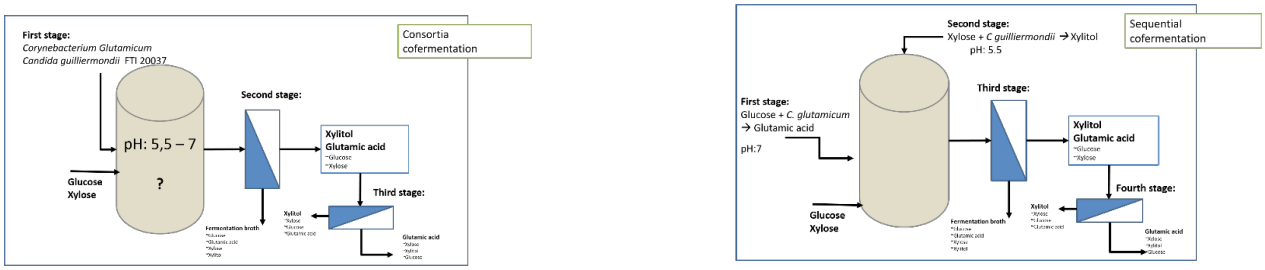

Figure 1. Sequential and consortia cofermentation