

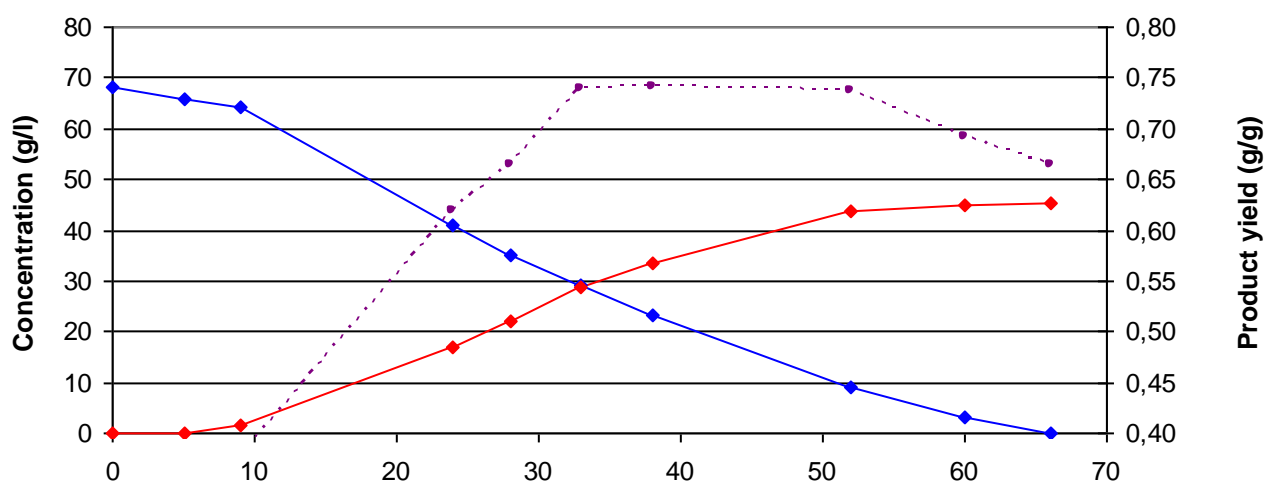
## XYLITE PRODUCTION FROM DRAFF

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Draff is brewage waste which can be used as animal feed, as raw material for biogas fermentation or as a source for food additives, e.g. xylite or their precursors like a number of sugar monomers (xylose, arabinose and glucose).

A main content of hemicellulose, one of the structure units in plants, is xylan. By hydrolysis of xylan it is possible to set free different sugar monomers. Xylose, one of these sugars, is a precursor for the xylite production, which is a well known additive in the food industry. The average amount of xylose in dried draff reaches amounts of 15%. The annual amount of wet draff in Germany is projected at 2.5 million tons, so this should be regarded as a source for xylite production. Another very promising substrate for xylite production is straw, with reaches xylose amounts up to 23%.

Winning and separation of xylite takes place in a multi-step process. In a first disintegration step the hemicellulose structure is cracked by a thermo-pressure-hydrolysis in presence of small amounts of acid. To optimize the yield of xylose and reduce the number and amount of impurities, several parameters can be changed, e.g. temperature, pressure and pH-value. The released xylose is reduced to xylite in a fermentation step in presence of the yeast strain *Candida guilliermondii* FTI 20037.



*Candida guilliermondii* FTI 20037 grows well on hydrolysates of draff after the treatment at 160°C. In batch culture, the volumetric production rate and xylite yield from xylose varied substantially with the xylose initial concentration and were at a xylose concentration of 70 g/l, maximum. The volumetric maximum production rate of xylite was 0,74 g l<sup>-1</sup> h<sup>-1</sup> and the xylite yield from xylose about 64 %.

Separating of xylite from the fermentation solution takes place in a continuous chromatographic process. This can be carried out by a continuous annular chromatograph with polystyrene-divinylbenzene resin with sulfonate-groups and calcium as counter-ion. To perform a stable separation step, interaction parameters between resin and xylite and sugar monomers have to be known.