



AgreenSkills
Pathways for inventive researchers



Genetic engineering of lipid metabolism and substrate utilization for improvement of biolipid production by oleaginous yeast

ZBIGNIEW LAZAR,

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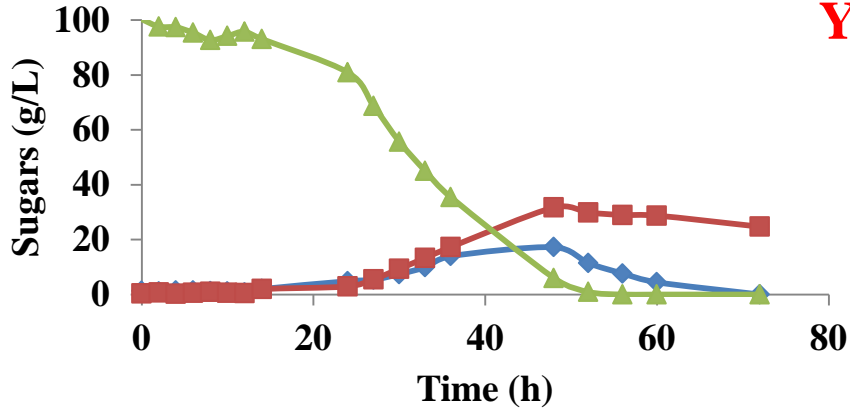
Biologie Intégrative du Métabolisme
LIPidique microbien



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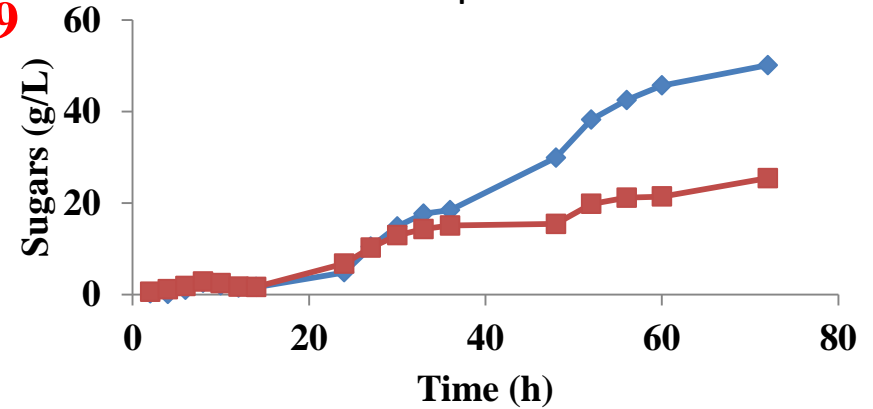
Sucrose hydrolisys and monosaccharides utilization by genetically engineered *Y. lipolytica*

Concentration



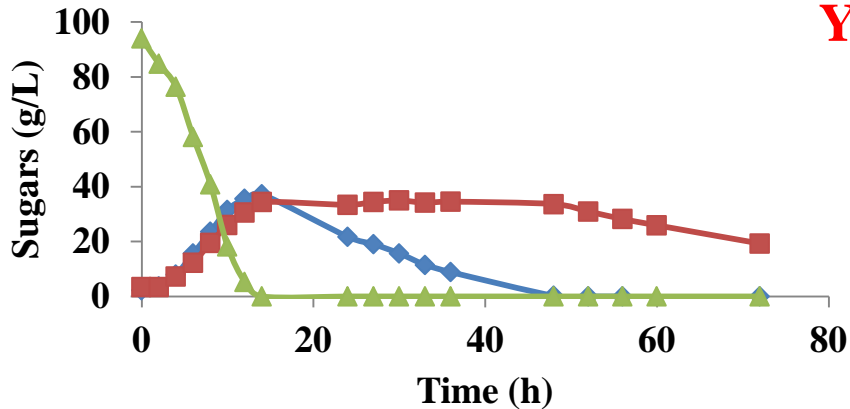
Y2529

Consumption

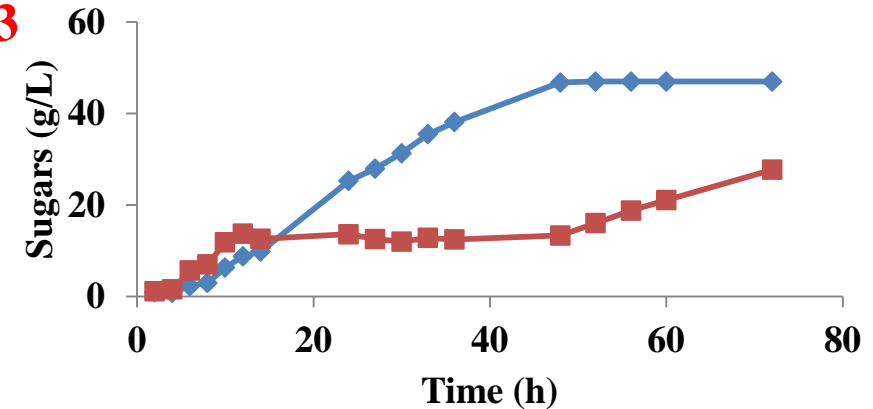


—●— Glucose —■— Fructose —▲— Sucrose

—●— Glucose —■— Fructose



Y2593



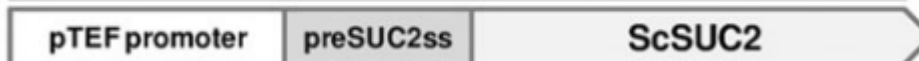
—●— Glucose —■— Fructose —▲— Sucrose

—●— Glucose —■— Fructose

Y2529



Y2593



34 genes checked by qRT-PCR – 6 upregulated in Fructose based medium

21 genes checked by overexpression in *S. cerevisiae* hxt null mutant (gift from Prof. E. Boles)

Sugar	Conc. (%)	YALI0C 06424	YALI0C 01342	YALI0C 08943
Glu	0.1	++	++	-
	1.0	++	++	-
	2.0	++	++	-
Fru	0.1	++	-	++
	1.0	++	-	+
	2.0	++	-	-
Man	0.1	++	++	-
	1.0	++	++	-
	2.0	++	++	-
Gal	0.1	++	++	-
	1.0	++	++	-
	2.0	++	++	-

Future prospects

Overexpression of putative hexose transporters in *S. cerevisiae* hxt null mutant to check their transport role

Improvement of *Y. lipolytica* sugar utilization through overexpression of different metabolic pathways

Lipid production from cheap substrates containing sugars