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Unravelling new strategies for butanol production in *Clostridium acetobutylicum* using *in silico* approaches

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For the last few years, the production of butanol has been the focus of researchers' attention when looking for alternatives to biofuels' production. Interesting results have already been achieved with heterologous organisms such as *Escherichia coli*. However, native producers from clostridia group still presents the best alternative to succeed; as they possess all the machinery required and evolutionarily were optimized to produce butanol. However, there are several limitations that need to be assessed in order to control the production of other unwanted end-products such as ethanol, acetone, lactate or succinate that may deviate the fluxes away from butanol. Strategies of metabolic engineering have been on the table for over the last 15 years. However, the targets that seemed obvious at first, have proven not to increment significantly butanol titers showing that *C. acetobutylicum* metabolism is not as straightforward as it seemed. Going deep into understanding the solventogenic metabolism became therefore a key step into overcoming the difficulties to channel the metabolism towards butanol production. In this work, we apply deep *in silico* analysis in order to learn and understand the peculiarities of this microorganism metabolism. Our study suggests a new *in silico* strategy to maximize butanol production.

Biography

Carla Andreia Freixo Portela has a PhD in Chemical and Biological Engineering since 2013 from the University of Minho and University of Auckland, where she worked on the reconstruction of the genome scale model of the pathogen *Enterococcus faecalis*. She currently works as a Post-doc Researcher in the biofuels area, namely for butanol production where she explores *in silico* strategies to optimize the solvent production using *clostridia species*.

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