



Centre for Bioprocess Engineering Research

University of Cape Town (UCT)

Cape Town, South Africa

www.ceber.uct.ac.za

Title:	Feasibility of value addition of sucrose to platform chemicals in South Africa
Abstract:	This project looks into the biological conversion of sucrose to platform chemicals and biofuels. The analysis started with a list of 39 chemicals identified from global studies. This was reduced to 21 chemicals by identifying chemicals that can be produced from sucrose via a biological route. A quantitative study on the selected chemicals was then done based on a weighting system to obtain the top 11 chemicals. The weighting done was arbitrary keeping in mind that the top chemicals identified must reflect the chemicals that are most important to the South African industry. It is for this reason that the data specific to the South African context was allocated the highest rating (30%). This was followed by the current cost ratio to the cost of sucrose (20%) and lastly other general information that are not specific to South Africa were given the least rating of 5%. A qualitative investigation was then done bringing down the list to 5 chemicals. The final 5 chemicals selected for further study are n-butanol, malic acid, succinic acid, ethanol and lactic acid. Several processes for the chemicals selected were developed. Finally the processes will be modelled and compared to existing petroleum based processes that produces the same platform chemicals.
Lead institution:	University of Cape Town
Partner institutions:	Sugar Milling Research Institute (SMRI)
Student name:	Kemi Jegede
Supervisor name:	Dr Siew Tai, Prof Sue Harrison
Degree:	MSc
Funded by:	CeBER, SMRI
Start date:	February 2015
End date:	December 2016
Feedstock:	Sucrose
Value chain products:	Identify the various biochemicals, biopolymers and biomaterials that will be targeted as intermediates or end-products in terms of biomass valorisation
Geographic source of the feedstock:	Eastern South Africa (KwaZulu-Natal, Eastern Cape and Mpumalanga)