

Concept of green chemistry for cassava flour chain: Xylooligosaccharides starch-based materials, and glycolipids - mannosileritritol lipids

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Cassava (*Manihot esculenta* Crantz) belongs to the Euphorbiaceae family, originally from South America. The global production of cassava in the years 2015/16 was 280 million tons. Nigeria, Thailand and Brazil are the three world's largest producers of cassava, representing approximately 40% of the total produced worldwide. The State of Santa Catarina/Brazil is among the largest producers of cassava. Cassava flour is a product with low added-value that generates residues, mainly cassava wastewater and peels. Cassava wastewater can be used for the production of mannosileritritol lipids (biosurfactant with high added-value) - biotechnological process relatively consolidated at laboratory scale; whereas cassava peels can be used for the production of xylooligosaccharides (a compound with high added-value) - concept of green chemistry for cassava chain. It is worth noting that the pre-treatments of cassava wastewater

(biosurfactant production) generate inherently starch. In addition, the production of mannosileritritol lipids using cassava wastewater has a significant drawback - the protein content - that hamper the ultrafiltration (most feasible method of mannosileritritol lipid purification). Therefore, the aims of this project are (I) to produce mannosileritritol lipids using a culture medium composed of cassava wastewater and biosurfactant inducers, (II) to synthesize membranes that are efficient produced mannosileritritol lipids, (III) to produce xylooligosaccharides from cassava peels, and (IV) starch-based materials, in particular adsorbents (stabilizers) of bioactives compounds. Therefore, these approaches can lead to the concept of green chemistry for cassava flour chain.