Evaluation of the forage sorghum biomass for biotechnological production of xylitol.

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The culture of sorghum is in great ascension in Brazil due to the favorable characteristics of this cereal as an excellent substitute for the maize in the animal feeding, with comparable nutritional value and the better adaptation for dry climates. Considering forage sorghum as a type of sorghum that is used as covering of the ground and production of ensilage, its characteristics as lignocellulosic material which is constituted of sugars in its cellulosic and hemicellulosic fractions, researches for the biotechnological exploitation of this biomass will contribute for obtainment of economic and social interest products, like xylitol. The obtainment of xylitol, a pentahydroxilic alcohol, commercially obtained by chemical catalysis of xylose proceeding from lignocellulosic materials is an option of exploitation of this biomass. This product has peculiar characteristics like its sweetener power similar to that of saccharose, anticariogenicity, indicated for diabetic and obese people allowing its application in different industrial segments. Due to its raised cost of chemical production, researches have been extensively carried out in order to search a technological alternative for its obtainment by biotechnological way. However, for xylitol production from lignocellulosic biomasses by biotechnological way, the hydrolysis of these materials for the solubilization of the sugars present in its hemicellulosic fractions is necessary. This fraction is of interest, because it has large amount of xylose, substract for the production of xylitol. Then, in the present work 3 varieties (A, B and C) of forage sorghum biomass for biotechnological production of xylitol were evaluated using the *Candida guilliermondii* yeast. Different stages of the process were carried out: chemical characterization of the biomasses, acid hydrolysis, vacuum concentration, detoxification and fermentations of the hydrolysates. The fermentative performance was evaluated from the determination of the xylitol yield ($Y_{P/S}$) and productivity (Q_P). For the chemical characterization of the 3 evaluated varieties, no relevant difference was verified in relation to amounts of the cellulose, hemicellulose and lignin fractions. However the variety A showed to be more promising for the production of xylitol as a function of the obtained $Y_{P/S}$ and Q_P maximum parameters. In this case the maximum values xylitol yield and productivity represented an increase of 28,57 and 51,43 %; 25 and 60.62 %, for $Y_{P/S}$ and QP of varieties B and C respectively.

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