

甜高粱茎秆汁液成分分析及浓缩贮藏的试验研究

Experimental research on storage of condensed stalk juice and composition analysis of juice of sweet soghum stalk

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作者	单位
梅晓岩	(1967—), 男, 辽宁沈阳人, 博士, 从事农产品利用及生物质能等方面的研究。上海 上海交通大学生物学博士后流动站, 200240。Email: mxy2431@sjtu.edu.cn
刘荣厚	男, 教授, 博士, 博士生导师, 主要从事可再生能源与环境工程方面的研究与教学工作。上海市东川路800号 上海交通大学农业与生物学院生物质能工程研究中心, 200240。Email: liurhou@sjtu.edu.cn
沈飞	上海交通大学农业与生物学院, 上海 200240

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中文摘要:

为提高甜高粱茎秆汁液制取燃料乙醇的原料利用率, 延长甜高粱茎秆及其汁液贮藏期限, 测定了辽甜1号、早熟1号、醇甜2号三个甜高粱品种茎秆及其汁液的营养成分, 采用浓缩法对甜高粱茎秆汁进行了贮藏试验。结果表明, 三个品种都含有丰富的糖分, 可以为酵母菌发酵制取酒精提供良好的碳源, 但总氮和某些矿物质元素(如: Fe^{3+})不能满足酒精酵母的营养需要; 甜高粱茎秆汁浓缩至4~5倍时, 可以抑制汁液中大多数微生物的活动, 使其中糖分不受损失; 在试验设定的真空浓缩工艺条件下(55~60℃, 0.15 MPa)甜高粱茎秆汁中产酸微生物或水解酶类仍保持活性, 使得还原糖占总糖的比率随贮藏时间延长而升高, 这有利于酒精发酵。

英文摘要:

Nutrient contents of stalk and its juice of three varieties of sweet sorghum including Liaotian No.1, Zaoshu No.1 and Chuntian No.2 were analyzed and experimental research on storage of condensed stalk juice was carried out in order to increase utilization rate and extend storage time of sweet sorghum for fuel ethanol production. Results showed that all the three sweet sorghum varieties contained plentiful sugar, which can provide enough carbon source for alcohol fermentation, however, total nitrogen and some mineral elements (Fe^{3+}) cannot meet the needs of alcohol fermentation. Activity of most microbes in stalk juice can be inhibited and the sugar can be maintained when the stalk juice was condensed to 4~5 times. Due to the reasons that the activity of acetous microbe or hydrolysis enzyme inside stalk juice can be maintained, ratio of reducing sugar to total sugar was increased with storage time at 55~60℃, 0.15 MPa vacuum condensed condition, which can be beneficial for the purpose of alcohol fermentation.

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服务热线: 010-65929451 传真: 010-65929451 邮编: 100026 Email: tcsae@tcsae.org

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