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BOOK OF ABSTRACTS

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THEME:

BIOCHEMISTRY & MOLECULAR BIOLOGY:
OPTIMISING THE VALUE OF LOCAL RESOURCES FOR DIRECT FOREIGN INVESTMENT AND YOUTH EMPOWERMENT

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FB 077
PRODUCTION OF BUTANOL FROM PLANTAIN TRUNK HYDROLYSATE USING *Clostridium acetobutylicum* IN A SUBMERGED FERMENTATION

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Abstract

Biobutanol from lignocellulosic biomass has gained much attention as a source of bioenergy production. However, the availability and the cost of the biomass are important factors. In this work, plantain trunk biomass was used as feedstock for the production of biobutanol through submerged fermentation. The plantain trunk biomass were sun dried, and milled into fine particles using blender, followed by pre-treatment with dilute sodium hydroxide 4 %(w/v). Enzymatic hydrolysis of un-pretreated and pretreated plantain trunk biomass was carried out for 5 days using cellulase and pectinase separately and later combined for comparison. *Clostridium acetobutylicum* isolated from spoilt beef was used to ferment the enzymatic hydrolysate under aerobic and anaerobic condition to monitor glucose consumption for 7 days of fermentation. The fermentation products were analyzed by using gas chromatography GC (SRI 8610). Highest glucose yield (79.59 mg/g) was obtained when cellulase and pectinase were combined on pretreated biomass. Also glucose consumption was higher in anaerobic compared to aerobic fermentation resulting in butanol yield of 0.0243 ml/l and 0.0198 ml/l respectively. The result indicates that alkaline pretreatment of plantain trunk biomass when hydrolysed with combined cellulase and pectinase in anaerobic fermentation could give a high yield of lignocellulosic biobutanol.

Key words: Lignocellulosic wastes, pretreatment, plantain trunk, fermentation, biobutanol

FB 078
EFFECTS OF SPROUTING ON NUTRITIONAL AND FUNCTIONAL PROPERTIES OF FINGER MILLET AND WATER MELON SEED (FLOURS)

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Abstract

Food processing, particularly sprouting induces activation and synthesis of hydrolytic enzymes that increases nutrient availability in food crops. The demand in sprouted seeds has been focused on low cost of processing, additive free and thus beneficial for human consumption. Consumer's interest for healthy and convenient foods has increased due to concerns for Diabetics, Obesity and Cholesterol. More so, there is no guideline about how much sprouted seeds food products should contain to exert any health benefits. In this study, we investigated the effects of different sprouting days on the nutritional and functional properties of finger millet and water melon seed (flours). The nutrient compositions and functional properties of flour samples were determined using standard analytical methods .vitamin (B2, B3 B6, B9, A, C and E increased significantly during sprouting and the highest vitamin score was observed at day six as follows: 1.630±0.025, 3.237±0.015,2.753±0.026,1.390±0.006,2.033±0.009,4.293±0.023,2.147±0.012 and 4.097±0.038, 4.753±0.050,4.090±0.035,1.697±0.044,7.027±0.022,4.867±0.024,5.843±0.026 for both finger millet and water melon seed (flours) respectively. Protein contents increased in sprouting and were highest at day six which were 26.610±0.052 and 34.630±0.030 for both flours respectively. Antinutrients were reduced to minimal level in sprouting for both flour samples. There were significant ($P \leq 0.05$) differences in the functional properties of the flour blends for both finger millet and water melon seeds respectively. Results showed that sprouting can be used for improving nutrient quality of food crops. The current findings suggest that composite flour of sprouted finger millet and water melon seeds may be used in confectionaries for preparing gluten free foods.

Key words: Sprouting, Finger millet, Water melon seed, Hydrolytic enzymes, Composite flour