

Fermentable Bio-Ethanol Using Bakers and Palmwine Yeasts: Indices of Bioavailability of Carbohydrate and Sugar from Fungal Treated Rice Husk

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Abstract : Pure strains of *Aspergillus fumigatus* (AF), *aspergillus niger* (AN), *aspergillus oryzae* (AO), *trichophyton mentagrophyte* (TM), *trichophyton rubrum* (TR) and *Trichophyton soudanense* (TS) were isolated from decomposing rice husk. Freshly processed rice husk in Mandle's medium were heat pre-treated using an autoclave at 121oC for 20 minutes. The isolated fungi as monoculture and di-culture combinations were inoculated into each of the pre-treated rice husk with the exception of two controls. Seven days hydrolysis was followed by estimation of carbohydrate, reducing sugar and non-reducing sugar. Fungal treated rice husks were left to ferment for 7 days with introduction of both baker's and palm wine yeast. The result obtained in the work gave the highest carbohydrate (20.53 ± 2.73 %) from rice husks treated with TS + TR di-culture. The highest soluble reducing sugar (2.66 ± 0.14 %) was obtained from rice husk treated with TM. The highest soluble nonreducing sugar (18.08 ± 2.61 %) was from AF. The introduction of yeasts from palm wine gave the highest bio-ethanol (12.82 ± 0.39 %) from AO. The highest bio-ethanol (6.60 ± 0.10 %) from baker's yeast fermentation was in AO + TS treated rice husk. There was increased availability of sugar and moderate yield of bio-ethanol, especially from palm wine yeast.

Keywords : fungi, rice husk, carbohydrate, reducing sugar, non-reducing sugar, ethanol, fermentation

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