Baker’s yeast biomass production with rice as carbon and soy meal as nitrogen sources

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Abstract

Aims: This research was an attempt to produce baker’s yeast biomass utilizing locally available carbon and nitrogen sources. Methodology and results: The yeast was grown in different media (30 °C, pH 5.0), which were aerated (100 bubbles/min). In the YPS medium containing 50 g/L; 5.53 g/L biomass was obtained, when sucrose was replaced with rice flour hydrolysate (50 g/L), the biomass obtained was 5.72 g/L. With 3.45 g/L of bacteriological peptone 6.02 g/L and 7.5 g/L of yeast extract, 7.12 g/L of biomass were obtained. Highest biomass (7.98 g/L) was obtained when rice protein was hydrolyzed with 10.0 mL/L Neutrase, a protease. Replacing bacteriological peptone (3.45 g/L) and yeast extract (7.5 g/L) with refluxed soy meal or soybean suspension, recorded 6.50 and 6.38 g/L of biomass respectively. Increase in reducing sugars to 200 g/L increased the biomass to 12.38 g/L. Double the amount of soy meal protein hydrolysate increased the biomass to 15.90 g/L. Replacing (NH4)2HPO4 with refluxed soy meal suspension gave similar biomass production (15.58 g/L). Thus replacing commercial bacteriological peptone, yeast extract and (NH4)2HPO4 with refluxed soy meal suspension is possible for baker’s yeast biomass production. Further by optimizing the concentrations of sugar and nitrogen sources led to 2.57 folds increase in baker’s yeast biomass production. Conclusion, significance and impact study: Locally available rice flour hydrolysate and soy meal protein provides better alternatives to commercial carbon and nitrogen sources to produce baker’s yeast.