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**Fermentative Production and Statistical Optimization of Xylitol Using Novel Isolates of *Candida parapsilosis* Strain BKR1 in Indigenously Designed Multiphase Reactor**

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Xylitol is a natural polyol and most widely known for its sugar substitute properties in diabetic patients. It is also used against the oral bacterial population. Most fascinating approach for commercial production of xylitol involves the suitable yeast fermentation. In this present investigation, factorial Optimization of these medium and process conditions are studied. Xylitol production by *Candida parapsilosis* strain BKR1 using Plackett-Burman and RSM are reported in modified minimal medium. The Plackett-Burman screening design reports the significant medium components are Xylose, yeast extract, Potassium Dihydrogen phosphate and magnesium sulphate. Further factorial optimization using face centered central composite design reveals the optimum levels of the significant medium components as Xylose – 104.69 g/l, Yeast Extract – 4.12 g/l;  $\text{KH}_2\text{PO}_4$  – 2.84 g/l and  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$  – 2.09 g/l. Also the process parameters such as agitation, pH, temperature and inoculum level were optimized and validated as Agitation: 107 rpm, pH – 5, Temperature – 29.9°C, Inoculum level – 1 ml. Bioreactor was designed and a pilot scale study was being carried out.