

Biotransformation of various carbon sources to kojic acid by cell-bound enzyme system of *A. flavus* Link 44-1

ABSTRACT

The ability of cell-bound enzyme of *Aspergillus flavus* Link 44-1 for production of kojic acid was studied in resuspended cell system. Cell material was produced in batch fermentation using 2 L stirred tank fermenter. The cell mycelia were then resuspended into 250 mL shake flask containing various carbon sources solution. Among the carbon sources tested, glucose gave the highest kojic acid yield based on carbon consumed (0.365 g/g) followed by sucrose (0.279 g/g), starch hydrolysate (0.212 g/g) and fructose (0.195 g/g). The rate of biotransformation was increased with increasing mycelial cell. Kojic acid production was also varied with different glucose and sucrose concentrations. The highest production was obtained at 100 g/L glucose and 100 g/L sucrose with a final kojic acid concentration of 45.3 and 33.4 g/L, respectively. The rate of biotransformation of glucose and sucrose to kojic acid followed the Michaelis–Menten equation, suggesting that the biotransformation rate vary with substrate concentration similar to the behaviour of many enzymes reaction.

Keyword: Kojic acid, Biotransformation, Cell-bound enzyme, Resuspended cell system, *Aspergillus flavus*