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Title: Lactose Hydrolysis in Whole Milk Using Immobilized *Kluyveromyces marxianus* Cells

Author: Parmjit S. Panesar

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:: Table of Contents

:: Full Text

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Abstract: To overcome the problem of enzyme extraction and poor permeability of cell membrane to lactose, permeabilization of *Kluyveromyces marxianus* cells was carried. Permeabilized whole cells can also be advantageous over more pure enzyme preparations due to increased stability maintained by the intracellular environment. In view of the advantages of immobilized cell system over free cell system, the permeabilized yeast cells were immobilized by entrapment in calcium alginate gel. Different process parameters (alginate concentration, bead size, biomass load, temperature, agitation, incubation time) were optimized to enhance the lactose hydrolysis. Maximum lactose hydrolysis (84.8%) was observed with yeast cells immobilized in 2% (w/v) alginate concentration after 150 min of treatment time. The developed system was highly stable and the alginate entrapped yeast cells can be recycled up to 7th cycle without any significant decrease in their ability to carry out the lactose hydrolysis.

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