

Growth and yield optimizations of recombinant cell protein in cells during fermentation in cell medium X

Popular Science Report

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In 2012 the total biotechnology market is reached above 250 billion us dollars. If the development and production keeps up the market size will have doubled until 2016. To increase the share in this cake of revenues is therefore interesting for a company such as Medicago AB.

To produce the protein of desire the genetic code of the gene to the protein is collected and inserted into a circle of DNA – a vector. The vector then carries foreign DNA and becomes a plasmid which can be injected into the desired cells. The cells are grown under special sterile conditions which no other cells can stand and the desired recombinant protein can be produced and harvested. To improve the harvest special levels of components in the medium, the cell food, can be adjusted and changed.

This master thesis was based on the work to increase recombinant cell protein yield from growth of cells. To do this both flask and bioreactor experiments were ran in parallel to find the best setup and medium components. The flasks enabled multiple evaluations of different components which later could be run in the larger bioreactors for real and higher yielding production.

The results showed a decrease in medium cost for the new medium with 69% and increased wet weight yield of cells of 56% and a return on investment (ROI) for the productions ranging from in between 1500 to 3000 percent.