

## Efficiency of Air Lift Reactor in Producing Single Cell Protein from Cheese Whey

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Nowadays the lack of food specially protein is the most important problem. Because of the increasing of the world population the need for food is increasing day by day for this reason researches are searching for cheap resources of protein for people. Whey is by- product of cheese factory. whey provides ecological problems because of having high COD. According to these problems many researches have been done on whey and different products were achieved such as single cell protein.

In this research, the production of single cell protein from whey and *trichosporon* yeast are studied in external loop airlift reactor. Effective factors on gas hold up Such as air giving, ratio of down comer diameter to riser diameter and height of liquid in gas separator were studied and optimized. In this optimized situation the rate of single cell protein was achieved.

The results of experiments showed that optimum value for air giving intensity was 2.27 cm/s , ratio of down comer diameter to riser diameter was 0/5 cm and height of liquid in gas separator was 3 cm. In this optimum condition, the amount of single cell protein was 18.9 g/l. The rate of single cell protein in stirred reactors and bubble column was 10.38 and 17.3 g/l respectively in other's researches. In comparison, external loop air lift reactor showed an increase about 8.5 percent to bubble column and 45 percent to stirred reactor in producing single cell protein. So external loop air lift seems suitable in producing single cell protein. producing single cell protein can be studied in Other air lift reactors such as internal loop airlift reactors and obtained results can be compared with the results of this research.

**Key words:** Single cell protein, Reactor, Air lift reactor, Whey

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