WHEY, A POTENTIAL SUBSTRATE FOR PILOT PRODUCTION OF $\beta$-CAROTENE BY Blakeslea trispora.

Sujata A. Chiplunkar, Anita A. Ashtaputre and V. V. Modi.
Department of Microbiology, M.S. University, Baroda 390020, India.

The two sexual forms 'plus' and 'minus' of the heterothallic mold Blakeslea trispora synthesize remarkably enhanced levels of the secondary metabolite $\beta$-Carotene in mated cultures. We have observed that the mated cultures synthesize enhanced levels of the key enzymes of the $\beta$-Carotene synthetic pathway and incorporate radiolabeled intermediates such as acetate, mevalonate and leucine at increased rates. The mating event forms the basis for developing a feasible process for the industrial production of $\beta$-Carotene by fermentation.

In the present work, an attempt has been made to scale-up the fermentative production of $\beta$-Carotene by B. trispora to the industrial pilot scale (75 lit. capacity fermenter) using whey as the basal medium. A maximum yield of 180 mg/litre was obtained with whey within 65 hours of fermentation, which was a two-fold improvement on the final yield of 50 mg/litre obtained with a synthetic medium in 100 hours. The scale-up from a 20 litre to a 75 litre fermenter resulted in a 12-fold increase in the $\beta$-Carotene yield with the whey medium. We have thus found whey to be an excellent substrate for the fermentative production of $\beta$-Carotene by B-trispora. The fermentation biomass can be directly used as a source of $\beta$-Carotene in animal feed.

INTERNATIONAL PAPER PRESENTATION