Special Lecture

Strategy for Translating the Achievements From Shaken Flask to Fermentor

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In order to translate the laboratory achievements from shaken flask to fermentor, a new type of specially designed shaken flask, which is able to online determine the values of OUR, CER (or RQ) and KLa during the course of cultivation. Besides, it is provided with a port for on-site inoculating, sampling and feeding.

Three cases of bioprocess: ATP production from AR and Pi by glycolysis of immobilized brewers' yeast particles; cultivation of recombinant E. coli for expressing the fused protein of bFGF/GST and reduction of [R], [S]-ethyl aceto acetate to [S]-3-hydroxyl ethyl butyrate by and enantiotropic-selective reductase within bakers' yeast were carried out in above mentioned shaken flask and the optimized loci classici of OUR and CER (or RQ) during the courses of reaction were obtained. Then, to carry out the above mentioned bioprocesses in a 1.5L fermentor with following the optimal shaken flask loci of OUR and CER (or RQ) as close as possible by adjusting the agitator speed or air flow rate of fermentor. Thus, the optimal achievement in shaken flask can be easily reproduced in fermentor.

Finally, we believe that the optimal OUR and CER (or RQ) loci can reflect the main metabolic states of a proper culture, and these would be very important for bioprocess and bioreactor scale-up.