

MODIFICATION OF FLOCCULATION BIOREACTOR PERFORMANCE USING AN ANIONIC POLYMERIC ADDITIVE

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Flocculation Bioreactors present several advantages as compared to other high cell density techniques, when regarding design simplicity and energetic costs. There is however the inconvenience of low reaction rates caused by the diffusional limitations due to cell aggregation.

It has been demonstrated that in yeast flocculating systems the use of some polymeric additives enlarges the bridges formed between adjacent cells, thus reducing diffusional limitations in flocs.

Ethanolic fermentations were conducted in a continuous flocculation bioreactor both in the presence and in the absence of an anionic polymeric additive and performances were compared.

The experimental results show that, when fermentations were conducted in the presence of the additive, the maximum dilution rate allowing for total substrate concentration is 30% higher. However, as far as ethanol productivity is concerned, such an improvement is not observed, since ethanol conversion yield is reduced by the same factor.