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DISTRIBUTION OF OXYGEN TRANSFER RATES IN STIRRED BIOREACTOR FOR DIFFERENT FERMENTATION BROTHS - OXYGEN-VECTOR DISPERSIONS

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Abstract

The oxygen transfer into the fermentation broths could be improved in presence of oxygen-vectors, without intensification of mixing or aeration. The experimental results for simulated, *P. shermanii* and *S. cerevisiae* broths indicated the significant increase of k_La, by adding *n*-dodecane, but the magnitude of this effect depends especially on the cells affinity for hydrocarbon droplets. Therefore, due to the higher affinity of yeasts cells for hydrocarbon droplets during their entire growth cycle, the increase of oxygen mass transfer rate was lower and the influence of specific power input was different than those recorded for simulated or bacterial broths. By means of the experimental data, mathematical correlations describing the influences of the main parameters on k_La have been proposed for each studied fermentation systems at different positions on the broths height, with an average deviations varying between ±6.72% and ±6.93%.

Key words: bioreactor, *n*-dodecane, oxygen transfer, oxygen-vector

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