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# CORRELATION BETWEEN AERATION AND ERGOSTEROL PRODUCTION BY YEASTS

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## Abstract

The present study represents an extension of ergosterol production by *Saccharomyces cerevisiae* fermentation processes using oxygen-vector by establishing the influence of the analyzed main factors, such as aeration efficiency and hydrocarbon concentration. The study has been developed for batch and fed-batch fermentation systems and has been focused on the variation of ergosterol content inside the yeast cells during the fermentation cycle in correlation with hydrocarbon volumetric fraction, $C_{OV}$, glucose concentration, $C_G$, and air superficial velocity, $v_S$. Moreover, the variation of ergosterol content has been discussed in relation to the oxygen mass transfer coefficient, $k_La$. The experimental results obtained in both fermentation systems were quantified in two mathematical correlations describing the influences of the mentioned main parameters on ergosterol concentration, $C_E$. These two equations have the general expression $C_E = \alpha \cdot C_{OV}{}^{\beta} \cdot C_G{}^{\gamma} \cdot v_S{}^{\delta}$ ($\alpha$, $\beta$, $\gamma$, $\delta$ are coefficients and exponents), and offer a good agreement with the experiments, the average deviations being ±5.94% for batch fermentation and ±4.18% for fed-batchfermentation.

*Key words:* air superficial velocity, ergosterol, *n*-dodecane, oxygen-vector, *Saccharomyces cerevisiae*.

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