Superoxide Dismutase during Glucose Repression of *Hansenula polymorpha* CBS 4732

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Hansenula polymorpha CBS 4732 was studied during cultivation on methanol and different glucose concentrations. Activities of Cu/Zn and Mn superoxide dismutase, catalase and methanol oxidase were investigated. During cultivation on methanol, increased superoxide dismutase and catalase activities and an induced methanol oxidase were achieved. Transfer of a methanol grown culture to medium with a high glucose concentration caused growth inhibition, low consumption of carbon, nitrogen and phosphate substrates, methanol oxidase inactivation as well as decrease of catalase activity ($21.8 \pm 0.61\ \Delta E_{240} \times min^{-1} \times mg\ protein^{-1}$). At the same time, a high value for superoxide dismutase enzyme was found ($42.9 \pm 0.98\ U \times mg\ protein^{-1}$, 25% of which was represented by Mn superoxide dismutase and 75% – by the Cu/Zn type). During derepression methanol oxidase was negligible ($0.005 \pm 0.0001\ U \times mg\ protein^{-1}$), catalase tended to be the same as in the repressed culture, while superoxide dismutase activity increased considerably ($63.67 \pm 1.72\ U \times mg\ protein^{-1}$, 69% belonging to the Cu/Zn containing enzyme).

Apparently, the cycle of growth inhibition and reactivation of *Hansenula polymorpha* CBS 4732 cells is strongly connected with the activity of the enzyme superoxide dismutase.