

## Regulation of pAOX1 promoter in a *Komagataella phaffii* disrupted for gene encoding formate dehydrogenase

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*Komagataella phaffii* (formerly known as *Pichia pastoris*) has become an increasingly important microorganism for recombinant protein production. This has been facilitated principally using a strong and tightly methanol-regulated promoter from the alcohol oxidase 1 (AOX1) gene. However, despite its benefits, the use of methanol has some drawbacks, such as toxic cell effects, induction of cellular oxidative stress, and high oxygen demand for catabolism.

On the other side, formate, an intermediate of the methanol dissimilative pathway, has been described as an alternative inducer for AOX1 promoter. In this study, we present findings regarding the activation of the AOX1 promoter in a formaldehyde dehydrogenase-deficient strain, induced by endogenous formate. Under specific culture conditions, the specific productivity of the model protein lipase CalB, was found to be similar in the deficient strain compared to the non-deficient one. Here, the formation and potential role of endogenous formate in the regulation of the AOX1 promoter will be presented.

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