

## The Creation of a Yeast Model for 5-oxoproline Accumulation

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**Abstract :** 5-oxoproline (pyroglutamic acid) is a cyclic lactam of glutamic acid. In the cell, it can be produced by several different pathways and is metabolized into glutamate with the help of the 5-oxoprolinase enzyme (OPLAH or OXP1). The inhibition of 5-oxoprolinase enzyme in mammals was found to result in heart failure and is thought to be a consequence of oxidative stress [1]. To analyze the consequences of 5-oxoproline accumulation more clearly, we are generating models for 5-oxoproline accumulation in yeast. The 5-oxoproline accumulation model in yeast is being developed by two different strategies. The first one is by overexpression of the mouse  $\gamma$ -glutamylcyclotransferase enzyme. It degrades  $\gamma$ -glu-met dipeptide into 5-oxoproline and methionine taken by the cell from the medium. The second strategy is by providing high concentration of 5-oxoproline externally to the yeast cells. The intracellular 5-oxoproline levels in both models are being evaluated. In addition, the metabolic and cellular consequences are being investigated.

**Keywords :** 5-oxoproline, pyroglutamic acid, yeast, genetics

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