

# The effect of a DGAT inhibitor on triacylglycerol level and chronological lifespan in yeast *Saccharomyces cerevisiae*

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**Abstract:** Triacylglycerol (TAG) or triglyceride is a common lipid normally known as an everyday intracellular energy depot. Interestingly, recent findings suggested that TAG metabolism could involve controlling various lipid homeostasis regarding nutrient and stress responses. Moreover, there is evidence indicating that intracellular TAG level is correlated with the chronological lifespan (CLS) of the budding yeast, *Saccharomyces cerevisiae*. In this study, the CLS of *S. cerevisiae* was investigated under the effect of Pradigastat which is an inhibitor of diacylglycerol acyltransferase 1 (DGAT1), enzyme catalyzing the last step of TAG biosynthesis. The results showed that applying the inhibitor at two-day-old cells with a concentration of 50  $\mu$ M could effectively decrease TAG production and shortened CLS by 16.7%. The genetic ablation of DGA1 (DGAT1 equivalence in budding yeast) also resulting in a 33.3% CLS reduction. However, the inhibitor did not affect the TAG lipase-null cells, possibly because of the compensation effect of other DGATs. Therefore, the reduction of DGAT1 activities could conclusively lead to the decrease of yeast CLS. However, the underlying mechanism remains the subject of further investigation.

**Keywords:** chronological lifespan; triacylglycerol; diacylglycerol acyltransferase inhibitor

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